U.S. Army Research Institute
for the Behavioral and Social Sciences

Research Report 1869

Assessment of Two Desk-Top Computer Simulations Used to Train Tactical Decision Making (TDM) of Small Unit Infantry Leaders

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U.S. Army Research Institute

April 2007

U.S. Army Research Institute
for the Behavioral and Social Sciences

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REPORT DOCUMENTATION PAGE

1. REPORT DATE (dd-mm-yy) April 2007	2. REPORT TYPE Final	3. DATES COVERED (from. . . to) January 2005 to December 2006

4. TITLE AND SUBTITLE Assessment of Two Desk-Top Computer Simulations Used to Train Tactical Decision Making (TDM) of Small Unit Infantry Leaders	5a. CONTRACT OR GRANT NUMBER
	5b. PROGRAM ELEMENT NUMBER 62785

6. AUTHOR(S) Scott A. Beal (U.S. Army Research Institute)	5c. PROJECT NUMBER A790
	5d. TASK NUMBER 215
	5e. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Research Institute for the Behavioral and Social Sciences Infantry Forces Research Unit P.O. Box 52086 Fort Benning, GA 31995-2086	8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Research Institute for the Behavioral and Social Sciences 2511 Jefferson Davis Highway Arlington, VA 22202-3926	10. MONITOR ACRONYM ARI
	11. MONITOR REPORT NUMBER Research Report 1869

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

Contracting Officer's Representative and Subject Matter POC: Scott A. Beal

14. ABSTRACT *(Maximum 200 words):*

Fifty-two leaders in the Basic Non-Commissioned Officer Course (BNCOC) at Fort Benning, Georgia, participated in an assessment of two desk-top computer simulations used to train tactical decision making. Thirteen leaders trained with the Soldier Visualization Station (SVS) simulation, while 39 others trained with Simulation Exercise, or SimFX. Pre-simulation exercise measures included military and simulation experience, decision-making style, and tactical situation judgment. A questionnaire administered to leaders following simulation exercises documented their sense of personal involvement during mission execution and their perceptions of the training value of the simulations. Leaders in both groups were assessed individually for their ability to recognize and implement sound tactical decisions while serving as a squad leader of a light Infantry squad during patrol and defense missions in an urban environment. Results suggest that, in general, the use of desk-top simulations have potential value for training the tactical decisions leaders make during exercises that require greater expenditures of resources. However, the methods used to train with simulations impacted leaders' tactical decision making, their perceptions of the training value of simulations, and their ideas about what they learned from the experience.

15. SUBJECT TERMS

Games Simulation Training Tactical decision making Cognitive skills Infantry small unit leader Military Operations in Urban Terrain (MOUT)

SECURITY CLASSIFICATION OF			19. LIMITATION OF ABSTRACT	20. NUMBER OF PAGES	21. RESPONSIBLE PERSON
16. REPORT Unclassified	17. ABSTRACT Unclassified	18. THIS PAGE Unclassified	Unlimited	94	Ellen Kinzer Technical Publications Specialist (703) 602-8047

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ACKNOWLEDGEMENTS

ASSESSMENT OF TWO DESK-TOP COMPUTER SIMULATIONS USED TO TRAIN TACTICAL DECISION MAKING (TDM) OF SMALL UNIT INFANTRY LEADERS

EXECUTIVE SUMMARY

Research Requirement:

Success in the current operating environment requires that US Army small unit Infantry leaders make rapid, adaptive, tactical decisions in response to uncertain and changing battlefield conditions. This requirement has increased demands for improving the cognitive skills of current and future Infantry leaders. In response, the Department of Defense (DoD) has issued directives to develop and implement computer-based simulations and games for sharpening leaders' cognitive skills while attempting to reduce training costs. This report represents ongoing research in this area and documents an assessment of two desk-top computer simulations used to train small unit Infantry leaders' tactical decision making.

Procedure:

Fifty-two Infantry leaders attending the Basic Non-Commissioned Officer Course (BNCOC) at Fort Benning, Georgia, served as participants for this assessment. Thirteen leaders completed two urban-based scenarios (patrol and defense) with a desk-top version of a simulation named Soldier Visualization Station (SVS). These leaders completed the scenarios under the direction of a qualified observer/controller, interacted with role players during mission execution, and participated in after-action reviews. The 39 others completed the same scenarios using a desk-top simulation named Simulation Field Exercise, or SimFX. Leaders in the SimFX group completed the scenarios without instructor intervention or any human interaction.

Pre-execution measures were obtained of the leaders' military background, combat experience, and decision-making style. Leaders were assessed on their ability to make effective situational judgments by completing pre- and post execution situation judgment tests. During the execution of the two scenarios, leaders' were rated on their ability to make rapid, accurate, tactical decisions when faced with uncertain, changing combat conditions. A questionnaire administered after the simulation exercise documented their sense of personal involvement during mission execution, their perceptions of the training value of the simulation they used, and opinions of its strengths and weaknesses.

Findings:

In general, the use of desk-top simulations have potential value for training the tactical decisions leaders make during exercises that normally require greater expenditures of resources. The methods used to train with the simulations (i.e., observer/controller facilitated or stand-alone), the characteristics of the simulations themselves, and the previous experiences that leaders had with specific types of combat missions impacted their tactical decision making, their

perceptions of the training value of desk-top simulations, and their ideas about what they learned from the experience.

Utilization of and Dissemination of Findings:

The results of this research will influence the future development and use of desk-top simulations and games for training and assessing the cognitive skills of Infantry leaders. Findings will be discussed with key individuals from the Army training community at Fort Benning and others involved in military training and simulation development.

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Assessment of Two Desk-Top Computer Simulations Used to Train Tactical Decision Making (TDM) of Small Unit Infantry Leaders

Introduction

In June, 2004, the Department of Defense (DoD) issued a directive for developing efficient, effective methods of training that meet the demands of preparing Soldiers for the contemporary operating environment (COE). This directive reiterated a previous call for the development and use of live, virtual, and constructive simulations for leader training (DoD, 2004).

In response to the DoD's directive, and in their efforts to meet training requirements and compensate for tightened resources, the US Army Infantry School at Fort Benning, Georgia, sought the use of desk-top computer games for training small unit leaders. Researchers at the Army Research Institute (ARI) at Fort Benning were asked by the U.S. Army Program Executive Office – Simulations, Training & Instrumentation (PEO-STRI) to conduct preliminary evaluations of the training effectiveness of these games (see Beal & Christ, 2004; 2005). During planning for these evaluations, ARI researchers recognized that a relatively large body of literature on the use of instructional games already existed. However, none of these studies were specific to the effectiveness of games used to train military tasks.

Since then, Hays (2005) published a literature review and discussion of the use and effectiveness of instructional games in a multitude of settings for a wide range of tasks and purposes. While Hays recognized the DoD's need to implement innovative training tools such as games, there were reasons to exercise caution. He concluded that the empirical research on instructional games was fragmented, and that the methodologies used in this research were often flawed. He continued by stating that, while in some circumstances games have offered effective means of training, in others they have not, and that trainers should not assume that the positive effects of using games can be generalized to tasks beyond those for which a game was intended to train. Hays summed up his review by stating, "The empirical research does not make a compelling case for games as the preferred instructional method (p. 43)."

Along with a firm call for more sound research on the effectiveness of instructional games, Hays offered recommendations that were consistent with results and lessons that emerged during our evaluations of games for Infantry leaders (Beal, 2005):

- **Games may be effective at training some cognitive tasks and skills when they are accompanied by other types of instructional support.**
- **Training objectives should be clear, well defined, and should determine when and how a game is used.**
- **Instructional feedback should follow performance.**
- **The presence of a qualified instructor is required for effective training.**

- **Games should not be used as "stand-alone" trainers, but should be part of an overall instructional process with clearly defined and obtainable goals.**
- **After-action reviews should be conducted to reinforce performance that meets or exceeds a predetermined standard, or to correct poor performance that does not.**

In spite of the lack of a sound body of research on the effectiveness of instructional games, and regardless of Hays' recommendation to exercise caution, the development and use of games to train military tasks is growing rapidly (see Bourge & McGonigle, 2006). The arena of military institutional training, once reserved for large scale, relatively expensive simulation systems, is now open to game developers who can enhance existing systems or provide Soldiers with new low-cost, realistic, immersive games.

Game or Simulation?

The proliferation of games for military training has blurred the lines between training games and simulations. The US Army Training and Doctrine Command (TRADOC) provided the following definitions (TRADOC Pamphlet 350-70-1, 2004):

- **Simulation:** A method for implementing a model over time; any representation or imitation of reality, to include environment, facilities, equipment, maneuver operations, motion, role playing, leadership, etc. It is the representation of individual study by which a Soldier learns or reinforces previous learning.
- **Simulator:** A device, computer program, or system that performs simulation; for training, a device that duplicates the essential features of a task situation and provides for direct practice; a physical model or simulation of a weapons system, set of weapons systems, or piece of equipment which endeavors to replicate some major aspect of the equipment's operation.

TRADOC has not yet provided a definition specifically for games used for Army training. Yet, many of the games and simulations that were built recently for training Army Soldiers can be described by the definitions presented above. This complicates an understanding of differences between training games and simulations. To complicate matters further, Hays (2005) stated, "In the literature on instructional games, we often find the terms simulations, games, simulation-games, and computer games used interchangeably (p. 9)." Because differences between games and simulations have become more difficult to identify, it may be more appropriate to understand them according to the purposes for which they are used and their functional effectiveness[1].

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[1] We used the terms "training games" and "simulations" interchangeably and made no attempt to differentiate training games from simulations according to any identifying criteria. We placed less emphasis on operational definitions of games and simulations and more emphasis on they way information was presented, the way games and simulations were used, the training objectives that dictated their use, and the extent to which their use met training objectives successfully.

Using Desk-Top Computer Simulations to Train Cognitive Tasks and Skills

Pleban, Eakin, Salter, and Matthews (2001) investigated the extent to which a simulation named the Soldier Visualization Station (SVS) could be an effective means for training small unit, dismounted Infantry leader cognitive tasks and skills. These assessments consisted mostly of Infantry leaders executing urban operations-based scenarios within a fully immersive environment. Training Soldiers in this type of constricted environment required a relatively high staff-to-Soldier ratio and resulted in a high cost-to-benefit payoff. However, results from this assessment were corroborated by Hays' (2005) more recent conclusions drawn from studies conducted in a variety of settings. Both sets of evaluations offered evidence suggesting that games and simulations had the potential to provide Infantry leaders with opportunities to practice cognitive skills such as situation awareness, adaptability, and tactical decision making.

Based on previous research and Hays' conclusions, and in keeping with the Army's immediate training resource requirements, we proposed that relatively low cost desk-top computer simulations could provide Infantry leaders with opportunities to practice some of the same cognitive tasks and skills they practiced using more resource intensive, fully immersive simulation systems and current field training events. More specifically, it was the use of desk-top computer simulations for training and assessing Infantry leader tactical decision making toward which our research efforts were aimed.

Purpose of the Assessment

As stated above, ARI conducted evaluations to determine the effectiveness of training games developed for small unit Infantry leaders (Beal & Christ, 2004; 2005). From these evaluations, a collection of empirical questions emerged regarding the use of desk-top computer games and simulations for training tactical decision making (see Beal, 2005):

- **Can desk-top computer games and simulations be used to train and assess the types of tactical decisions that Infantry leaders initiate under current training and combat conditions?**
- **Can lower-fidelity, two-dimensional (constructive) systems provide tactical decision making opportunities similar to the ones provided by higher-fidelity, three-dimensional (virtual) systems?**
- **Can lower-resource, "stand-alone" simulation training experiences allow tactical decision making similar to higher-resource, instructor-facilitated simulation training experiences?**
- **Are there discrepancies between Infantry leaders' perceived value and efficacy of desk-top simulation training and their actual tactical decision making performance when using these simulations?**

The purpose of this report was to describe an experiment conducted to address these questions. This experiment consisted of a comparison of two groups of small unit Infantry leaders. One group of leaders used a desk-top computer version of a simulation

named the Soldier Visualization Station (SVS), while the other group used a desk-top simulation named Simulated Field Exercise, or SimFX. The criterion measure for both groups was rapid and accurate tactical decision making during execution of two urban operations: patrol and defense.

Soldier Visualization Station (SVS)

The modified version and structure of the SVS used in this research was a desk-top computer-based simulator that provided dismounted Infantry leaders with a view of a virtual world via a computer monitor. The simulated terrain in which a leader executed a mission was based on the McKenna MOUT site at Fort Benning, Georgia. Leaders used a joystick and a computer keyboard to move and fire weapons within the virtual environment and a radio headset to communicate up and down the chain of command. The SVS provided all of the necessary combat and support assets needed for successful mission execution. The OneSAF Test Bed architecture, which was integrated into the SVS, provided the necessary semi-automated friendly and opposing forces (for more complete descriptions of the SVS, see Goldberg, S. L., Knerr, B. W., & Grosse, J. R., October, 2003; Knerr, B. W., Lampton, D. R., Goldberg, S. L., Thomas, M. A., Comer, B. D., Grosse, J. R., Centric, J. H., Blankenbeckler, P., Dlubac, M., Wampler, R. L., Siddon, D., Garfield, K. A., Martin, G. A., & Washburn, D. A., 2003)

SimFX

SimFX was developed by Micro Analysis and Design under the Army Phase II Small Business Innovative Research (SBIR) program (see Christ, R. E., 2006; Archer, R., Brockett, A. T., McDermott, P. L., & Warwick, W., 2006). It was described by the authors in their user guide as follows:

"SimFX is a simulation-based training application designed to teach information...and decision making skills to small unit leaders as the Army transitions to the...digital battlefield of the future. [Similar] to immersive virtual reality or game-based training systems, SimFX cognitively engages the [leader] in a branching story where he must make a series of decisions that...affect how the story plays out. Trading the continuous environment of virtual reality for a series of discrete [decision] points ensures that the [leader] will encounter specific decisions at specific points in the scenario, while still engaging the [leader] in the information...and decision making tasks that constitute training.

The unfolding events in the scenario depend not just on the [decisions] made by the [leader], but also on the information accessed to make those decisions. Thus, the [leader] can be rewarded with a successful outcome when he fuses the correct pieces of information, and is less likely to get lucky by randomly choosing the correct response without considering the information sources that are available and forming an understanding of the situation.

While SimFX has been…designed to support information fusion training for Infantry small unit leaders in the Army's future force, its underlying approach is general and flexible…SimFX is driven by training objectives, rather than by the tool itself. [SimFX] could be used to develop training for small unit leaders in conventional…forces, or for decision makers at other levels in the command hierarchy.

SimFx can also be used to create scenarios based on deliberate practice training concepts, where the [leader] is presented with a series of decisions or situations that all focus on rehearsing a single, specific skill (Micro Analysis & Design, 2006, p.1-2)."

Method

Participants

Fifty-two Infantry leaders attending the Basic Non-Commissioned Officer Course (BNCOC) at Fort Benning, Georgia, served as participants in this experiment. All leaders had 11B as their military occupational specialty. Thirteen leaders were assigned to complete two urban operations-based scenarios (patrol and defense) using a desk-top version of SVS. Thirty-nine more leaders were assigned to complete the two scenarios using SimFX[2].

Measurement Instruments

Biographical Information Questionnaire

This questionnaire was developed to permit each leader to describe experiences that might impact his tactical decision making performance and other measures and outcomes during the experiment (see Appendix A). In addition to obtaining information such as name, age, rank, and time in service, the questionnaire provided the following:

- Whether leaders had combat experience;
- Number of urban operations they completed as a squad leader in combat;
- Perceived level of computer proficiency and hours per week of computer use;
- Frequency of using Army simulations in the past year;
- Number of training events completed at the McKenna MOUT site since basic training;

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[2] The disproportionate number of leaders representing the two groups was a function of the different methods used to conduct the simulation exercises and the time constraints imposed by the BNCOC program of instruction. As described more completely in the Procedures section below, the SVS missions required a much higher researcher-to-leader ratio than the SimFX missions. As such, the methods used during the SVS missions restricted the number of leaders to one per session, whereas the SimFX missions were completed by up to 10 leaders per session. Time constraints imposed by the BNCOC program of instruction limited SVS sessions to a total of 13.

- Number of hours per week playing video games and perceived level of video game proficiency.

Decision Making Style Inventory

We used a survey developed by Nygren (2000) to assess the extent to which leaders employed three types of decision making styles: Analytical, Intuitive, and Regret-Based Emotional (see Appendix B). The Decision Making Style Inventory consists of 45 items, with 15 items for each of the three scales. Each leader indicated his level of agreement or disagreement with each item using a six-point scale.

Nygren (2000) reported that the scores on the three scales were orthogonal, suggesting that each scale represented an independent dimension of decision making style. As such, a leader could score high or low on more than one scale. The construct validity of the inventory was established by relating scores from the three scales to other well established measures of decision strategies. Nygren's comparisons resulted in the following conclusions about leaders' decision styles:

- Leaders who score high on the Analytical scale tend to employ rational thinking styles, are oriented toward measurable performance, goals and training, rely heavily on cognition orientation, and are less likely to take risks and make impulsive decisions.

- Leaders who score high on the Intuitive scale tend to employ experiential thinking, are less goal oriented, more risk seeking and impulsive, have higher self-esteem and a stronger belief in luck, are less likely to engage in self-deception, depression, or causal uncertainty.

- Leaders who score high on the Regret-Based Emotional scale tend to avoid personal harm to a greater degree, are more workload intolerant, more performance and goal oriented and self-handicapping, tend to engage in personal and judgmental self-doubt, depression, and causal uncertainty, tend to take fewer risks, and have lower self-esteem.

Results from two studies (Nygren, 2000; Nygren & White, 2002) suggested that the tendency toward either an analytic or intuitive decision style can affect performance on complex tasks performed by pilots during simulation training. A reliance on an analytical decision style led to poorer performance than an intuitive approach when there were multiple sub-tasks, each with its own performance criteria. The studies suggested also that as levels of workload increased, higher levels of performance were achieved by participants who tended to employ an intuitive decision making style. Participants who employed a regret-based emotional style did not experience poorer performance on these types of tasks. However, Nygren suggested that a regret-based decision strategy might have a greater affect on performance in more realistic environments where participants are required to make risky decisions that result in immediate consequences.

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Squad Leader Situation Judgment Pre- and Post-Tests

These situation judgment tests were developed to assess squad leaders' knowledge and ability to make doctrinally and tactically sound decisions under conditions of uncertainty and time constraints (see Appendixes C, D). The pre- and post-tests each consisted of 10 tactical situations typical to urban operations in the current theatre. Following each tactical situation was a list of four or five decisions from which the leader was required to choose the most effective. The pre-test was administered prior to the leaders' simulation experience, and the post-test was administered upon completion of the experience.

A group of six military subject matter experts assessed the extent to which the situation judgment tests presented valid, contextually relevant information. In addition, they ensured that the situations were written at an appropriate level of difficulty, and that leaders were provided with doctrinally and tactically sound responses from which they could choose. The situation judgment tests were then pilot tested, evaluated, and further modified, resulting in final versions that represented agreement among all the military subject matter experts involved in the development process.

Tactical Decision Making Rating Scales

In this research, two scenarios were developed to facilitate an assessment of each leader's ability to make appropriate, timely, and effective tactical decisions and to direct patrol and defensive operations successfully (see Appendix E). The scenarios were executed within a simulated tactical environment, patterned after the McKenna MOUT site at Fort Benning, in which uncertain conditions emerged during mission execution. Each leader was required to initiate tactical decisions at specific points that were presented as critical events during the scenarios.

Two Tactical Decision Making Rating Scales, one specific to the SVS and the other to SimFX, were developed by a group of military subject-matter experts to assess each leader's ability to make effective tactical decisions as uncertain battlefield conditions emerged during each mission. Copies of these rating scales are given in Appendixes F and G.

During scenario execution for the leaders assigned to the SVS group, the rating scale permitted a researcher, an observer/controller, and two confederates to evaluate each leader's ability to respond to and make tactical decisions for as many as 33 and 40 mission critical events for the patrol and defense scenarios, respectively. The rating scale was used to indicate (a) whether the leader recognized the need to initiate a tactical decision in response to an emergent critical event, (b) whether he was prompted by the observer/controller to initiate a tactical decision, (c) whether he initiated a tactical decision, and (d) if a tactical decision was initiated, whether the consequence was positive or negative.

For the leaders in the SimFX group, the rating scale permitted the same assessment characteristics as in the SVS group, except that leaders in the SimFX group were prompted by the program to initiate a tactical decision at each critical event during a mission. Both the SVS and SimFX rating scales took into account the possibility that a tactical decision might not be required for a specific critical event because the event was not presented during the scenario, because the mission was terminated before the event could be presented, or because the leader's plan accounted for the event prior to its occurrence.

The ranking hierarchy of tactical responses and their corresponding values shown in Table 1 was determined by a group of six military subject-matter experts at the Combined Arms Tactics Directorate (CATD) at Fort Benning, Georgia. One member of this group served as CATD's Tactics Chief, another served as Deputy Tactics Chief, and four more served as small group instructors in the Infantry Captains Career Course. Three small group leaders from the Advanced Non-Commissioned Officer Course (ANCOC) corroborated the ranking hierarchy. All military experts involved in developing and corroborating the ranking hierarchy were combat experienced in patrol and defense urban operations.

Table 1
Ranking Hierarchy and Corresponding Values for Tactical Decision Making During Scenario Execution

Ranking	Value	Tactical Responses
1	13	Recognized need to respond, implemented appropriate decision, positive consequence, implemented immediate, proactive follow-on decision.
2	12	Recognized need to respond, implemented appropriate decision, positive consequence.
3	11	Recognized need to respond, prompted to respond, implemented appropriate decision, positive consequence.
4	10	Recognized need to respond, implemented appropriate decision, negative consequence.
5	9	Recognized need to respond, prompted to respond, implemented appropriate decision, negative consequence.
6	8	Recognized need to respond, implemented poor decision, positive consequence.
7	7	Recognized need to respond, prompted to respond, implemented poor decision, positive consequence.
8	6	Recognized need to respond, implemented poor decision, negative consequence.
9	5	Recognized need to respond, prompted to respond, implemented poor decision, negative consequence.
10	4	Failed to recognize need to respond, did nothing.
11	3	Failed to recognize need to respond, prompted to respond, did nothing.
12	2	Recognized need to respond, did nothing.
13	1	Recognized need to respond, prompted to respond, did nothing.

SVS and SimFX Leader Perception Questionnaires

Two questionnaires were developed to document the reactions of leaders to their experiences with the SVS and SimFX simulations, and copies are given in Appendixes H and I. Each leader was asked to indicate his perceptions about the simulation to which he was assigned for the following topics:

- Overall training value;
- Tactical training value;
- Adaptability and decision making opportunities;
- Realism and tactical accuracy;
- Motivation for training with simulations;
- Fidelity and functional accuracy;
- Overall opinion of the training experience.

Most of the items on these questionnaires were selected and modified from those used in previous military training games evaluations (Beal & Christ, 2004, 2005) and from methods generated for use in large-scale, immersive virtual environments (Singer & Witmer, 1996; Witmer & Singer, 1994; 1998). We added questions for the purpose of addressing the empirical issues and lessons learned that emerged during earlier evaluations and that were listed previously in the report (see also Beal, 2005).

Procedures

SVS Group Procedures

Procedures Prior to Execution of the Patrol Scenario. Leaders in the SVS group completed a training session one at a time. Personnel during these sessions consisted of one participating leader, an observer/controller, two confederates, and one researcher (see Appendix J for a description of the simulation environment). Upon arrival at the ARI Warfighter Experimentation Laboratory, each leader in the SVS group completed the Biographical Information Questionnaire, the Decision Making Style Inventory, and the Squad Leader Situation Judgment Pre-Test. Following completion of these metrics the observer/controller provided each leader with the following:

- Explanation of the purpose of the experiment;
- Description of SVS and its component capabilities;
- Description of potential tactical issues with computer-generated friendly forces;
- General description of battlefield assets and capabilities (detailed in the operations order discussed below);
- Guidelines on and recommendations for interfacing with the simulation;
- Guidelines for using the joystick controller;
- Guidelines for using the communications radio and its accompanying headset and controller.

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The leader was then given time to practice using the radio, joystick, and computer keyboard functions until he reported that he was comfortable using them.

The observer/controller issued a platoon-level operations order for the patrol scenario to the leader (see Appendix K)[3]. The observer/controller instructed the leader to study the operations order carefully, to take notes, and to convert the order to the appropriate squad level. Upon completion of studying and converting the platoon-level operations order, the observer controller provided the leader with additional written and verbal information about the operations order and the purpose of the patrol mission.

Procedures for Executing the Patrol Scenario. During execution of the patrol scenario, the observer/controller observed all mission events from a master computer. He used a headset to give verbal commands and listen to all voice communications that were heard during mission execution. Two confederates observed mission events from their own computers, listened to voice communications with radios and headsets, and served as the voices of the participating leader's platoon leader, platoon sergeant, weapons officer, Bradley Fighting Vehicle operators, fellow squad leaders, fire team leaders, fire team members, robotics officer, and any other human entities on the simulated battlefield. Using the radio, the observer/controller had the capability to communicate with the confederates with or without the leader hearing these verbal communications. The leader was free to use the radio to communicate with his leaders and subordinates at any time during the scenario.

A researcher observed all mission events from a computer during scenario execution, in addition to monitoring all voice communications using a radio and headset. The observer/controller facilitated the mission execution according to the critical events that were included for assessment on the Tactical Decision Making Rating Scale. Though each leader was given the opportunity to conduct each mission according to his plan, and change his plan whenever he deemed necessary, the observer/controller exercised some control over execution according to the critical events included on the Tactical Decision Making Rating Scale. This allowed each leader the opportunity to implement multiple decisions, experience the consequences for each decision, and allowed the researcher to rate each decision made by the leader during mission execution. Critical events and subsequent decisions made by the leader during scenario execution that were not included initially on the Tactical Decision Making Rating Scale were noted and rated by the researcher.

Once scenario execution began, the leader was faced with multiple opportunities to make decisions and implement actions based on information in the operations order and in response to critical events and emerging battlefield conditions. All of the leader's decision opportunities and responses were observed by the observer/controller, the

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[3] Given that leaders had far more training and combat experience with urban patrols than with urban defense missions, all leaders from both groups were required to execute the patrol scenario first, followed by the defense scenario. This was done to lessen the impact of learning the simulation interface on implementing tactical decisions. As expected, the results confirmed that leaders had more difficulty implementing appropriate tactical decisions during the defense scenario.

confederates, and monitored and rated by the researcher. If the observer/controller perceived that an opportunity to recognize and implement a decision presented itself to the leader, but the leader did not respond, then the observer/controller intervened by giving the leader a verbal prompt to consider the opportunity to make an appropriate decision. The confederates were sometimes directed by the observer/controller to offer these verbal prompts. In almost all cases, the leader was given a single prompt for any one critical event. The researcher recorded the leader's response to each prompt and rated decisions accordingly.

The observer/controller determined when to end the scenario execution. In almost all cases, the observer/controller ended the scenario upon the leader's exposure to all the critical events. In two cases, the observer/controller ended the scenario execution as a function of poor decisions made by the leader that resulted in failure to complete the mission successfully.

Procedures Following Execution of the Patrol Scenario. Following mission execution, the observer/controller and one confederate with military subject matter expertise conducted an after action review with each leader. The after action review began with questions posed to the leader by the observer/controller or the confederate about the decisions upon which the leader's plan was based. The leader was given opportunities to discuss his squad level operations order, review the tactical components of his plan, discuss the rationale behind the decisions he made during the construction of his plan, and discuss the reasons why his plan was successful or unsuccessful.

The observer/controller or confederate followed a discussion of the plan with questions about critical events and decisions the leader made during execution. The leader usually responded by explaining his decisions, his reasons for making them, and the consequences that resulted. A dialogue between the leader, the observer/controller, and the confederate continued until most or all of the critical events and decision points were discussed. Probing questions to solicit critical thinking were then asked by the observer/controller, such as "Under what conditions would you make different decisions?" or "What decisions could you have made that would have led to a more positive outcome?"

The observer/controller completed the after-action review for the patrol scenario when he felt the leader had a solid understanding of the importance of making effective tactical decisions and the overall training experience. Following the after action review, the leader took a 15 minute break prior to beginning the defense scenario.

Procedures Prior to and During Execution of the Defense Scenario. The procedures prior to execution of the defense scenario were identical to the ones used prior to the patrol scenario, except that the leader did not take time to practice using the joystick and computer functions. In addition, the observer/controller did not spend time explaining the SVS interface, nor did he offer additional guidance on using the radio. However, the observer/controller did explain some of the key differences between the

two scenarios, as described in the operations orders. The procedures implemented during the defense scenario were identical to those used during the patrol scenario.

Procedures Following Execution of the Defense Scenario. The procedures following execution of the defense scenario included an after action review similar to the one described previously for the patrol scenario. Following the after-action review, leaders completed the Squad Leader Situation Judgment Post-Test and the SVS Leader Perception Questionnaire. Upon completion of these metrics, the leader was invited to ask any questions about the training experience and the SVS. The researcher asked questions about the leader's overall impressions of the experience. Upon completion of these questions, the leader was free to leave.

SimFX Group Procedures

The SimFX software program was used as a stand-alone trainer to compare with the SVS training experience that was controlled and facilitated by an observer/controller. Up to 10 leaders in the SimFX group executed both scenarios during each training session. Personnel during these sessions consisted of up to 10 participating leaders and one researcher. There was no observer/controller or confederates present. As such, there were no verbal prompts given to leaders during mission execution, and no AARs followed mission completion. Leaders were prompted to make decisions at key points during the scenarios by the SimFX software.

Upon entering the lab, the researcher instructed leaders to be seated at individual computer work stations. Each leader worked at his own computer work station. The researcher asked leaders to complete three packets in the order in which they were presented. The first packet consisted of the Biographical Information Questionnaire, the Decision Making Style Inventory, and the Squad Leader Situation Judgment Pre-test.

The researcher directed leaders to read carefully through the second packet containing instructions for completing the scenarios (see Appendixes L, M). The researcher instructed leaders to follow the directions contained in the packet and complete the patrol scenario first, and then complete the defense scenario. The researcher told leaders that only questions about using the computer and the SimFX software functions would be answered. The leaders were encouraged to work alone, to solve problems on their own, and to do their best regardless of their level of understanding of the simulation or the training experience.

Leaders were instructed by the researcher to complete the third packet after they finished both scenarios. The third packet consisted of the Squad Leader Situation Judgment Post-test and the SimFX Leader Perception Questionnaire. Upon completion of the third packet, the leaders were directed to an area outside the lab where they could ask questions about the SimFX training experience. The researcher used this opportunity to ask leaders about their overall impressions of the SimFX tool. Following these questions, leaders were free to leave.

Results

Biographical Information Questionnaire

All the leaders who participated in this experiment were non-commissioned officers, were the rank of Staff Sergeant, and had 11B (Infantryman) as their military occupational specialty (MOS). The average age of all leaders was 28 years, and the average time in service was 8.5 years. When asked if they had combat experience as a squad leader during urban operations, 87% reported that they had. Those who had combat experience reported an average of 97 urban operations completed as a squad leader. On a scale of one to seven, one being the lowest rating and seven the highest, leaders were asked to report their level of proficiency using computers. The mean rating of computer proficiency was 4.25 and the mean time per week using computers was 12 hours. Leaders reported that they had used an average of four Army simulations in the past year, and that they had trained an average of two times at the McKenna MOUT site at Fort Benning, Georgia. The mean amount of time for playing video games per week was 3.5 hours.

An alpha level of .05 was used for all statistical tests. As determined by Independent-samples t-tests, their were no significant differences between the SVS and SimFX groups on any item on the Biographical Information Questionnaire except level of video game proficiency $t(50) = 2.067$, $p = 0.044$. Leaders were asked to rate their level of video game proficiency on a scale of one to seven, one being the lowest rating and seven the highest. The mean ratings for this item for the SVS and SimFX groups were 4.36 and 3.23, respectively.

Decision Making Style Inventory

Scores for each of the three types of decision making styles scales (Analytical, Intuitive, Regret-Based Emotional) were calculated for each leader. Independent samples t-tests were conducted to determine if there were differences between groups on any of the three scales. No significant differences on any scale were found.

The possible range of total scores for each of the decision making style scales was a minimum of 15 and a maximum of 90 (15 items per scale, one to six points possible for each item). As discussed above, the scales were believed to be orthogonal, suggesting that each scale represented an independent dimension of decision making style. As such, a leader could score high or low on more than one scale. Table 2 below shows the descriptive statistics for each of these scales.

Table 2
Descriptive Statistics for the Decision Making Style Inventory Rating Scales

Descriptive Statistics	Decision Making Style Inventory Scales		
	Analytical	Intuitive	Regret-Based Emotional
Mean	72.85	68.10	43.31
Standard Deviation	8.92	7.44	9.10
Range	37 (50-87)	35 (53-88)	39 (28-67)

Leaders tended to score relatively high on the Analytical and Intuitive scales. For purposes of comparison, leaders' mean scores for these scales from this experiment were generally higher than scores from company commanders reported in a previous report (Beal & Christ, 2005). In addition, these scores were higher than those reported by Nygren (2000), who used college students as participants in his studies. However, the leaders' mean scores for the Regret-Based Emotional scale were lower than Nygren's reported mean scores for college students.

Squad Leader Situation Judgment Pre- and Post-Tests

A Mixed Factor Repeated-Measures ANOVA with one between-groups factor (simulation) and one within-group factor (pre/post SJT) showed that there were no significant differences between Squad Leader Situation Judgment pre- and post-test scores within either group. This suggested that the tests shared similar levels of difficulty. The analysis showed also that there were no significant differences between groups on scores for the tests. As such, the pre- and post-test scores were combined to form an overall Situation Judgment Test score for each leader to be used in additional analyses, as described later in this section.

Tactical Decision Making Rating Scales

A group of military subject-matter experts developed the patrol and defense scenarios to offer leaders opportunities to make effective and timely tactical decisions during mission execution. The scenarios offered all leaders the same core of critical events and decision opportunities, regardless of whether leaders used the SVS or the SimFX simulations. The differences were that leaders who trained with the SVS were prompted by an observer/controller to recognize critical events and implement decisions during mission execution, whereas those who trained with SimFX were prompted by the simulation to make decisions at key points during the scenarios. As a result of a leader's actions during execution and the observer/controller's responses to those actions, additional events could have emerged for the SVS group, whereas the presentation of critical events during SimFX was predetermined. Therefore, no additional events could have emerged for the SimFX group. In addition, no AARs were provided for leaders in the SimFX group.

Rating Tactical Decision Making. During mission execution for leaders in the SVS group, each leader received a rating for each decision he implemented at each critical event during execution of the scenarios. If additional events emerged during scenario execution as a result of the leader's actions or the observer/controller's responses to the leader's actions, then the events were noted and the subsequent decisions made by the leader, if any, were rated. The researcher assigned all ratings during execution, and then corroborated ratings with the observer/controller and the confederates either during or at the conclusion of each scenario.

For leaders in the SimFX group, all of their responses to events presented in the scenarios, and every other computer function they initiation, were recorded automatically by the SimFx program software. A group of military subject-matter experts were given records of leaders' scenario executions, and then rated each leader's tactical decisions at each critical event presented by the scenario during execution according to the criteria shown in Table 1.

All decision ratings were assigned a corresponding value for purposes of statistical analyses. These assigned values were based on the ranking hierarchy presented in Table 1. The range of values was from 1 to 13 (1 = worst possible tactical decision, 13 = the best). Statistical analyses that included these values were described below.

Analysis of Scenario Execution Times. A Mixed Factor Repeated-Measures ANOVA showed that the two groups of leaders did not differ significantly on the time they used to execute either the patrol or the defense scenarios. This analysis showed also that times to execute the scenarios within each group did not differ. These results suggested the following: (a) regardless of the simulation with which leaders trained, the groups spent equivalent amounts of time executing the scenarios, and (b) regardless of the scenario, execution times were equivalent within each group.

Analysis of Percentage of Tactical Decisions Initiated During Execution. The total number of tactical decisions that were implemented by each leader during each scenario was calculated. This total number was then divided by the number of critical events presented during each scenario execution (33 and 40 for the patrol and the defense scenarios, respectively) to arrive at the percentage of tactical decisions initiated during scenario execution. A Mixed Factor Repeated-Measures ANOVA showed significant differences between groups on percentage of tactical decisions initiated $F(1, 38)= 21.172$, $p = 0001$, with a moderate effect size (eta squared = .358). The same analysis showed that within-group differences across scenarios were significant $F(1, 38) = 28.439$, $p = .0001$, with a moderate effect size (eta squared = .428) (see Figure 1). The mean percentages (and standard deviations) of tactical decisions initiated during the patrol scenario were 92 (11.8) and 76 (4.5) for the SVS and SimFX groups, respectively. For the defense scenario, mean percentages were 74 (19.6) and 66 (8.8) for the SVS and SimFx groups, respectively. There was no significant interaction.
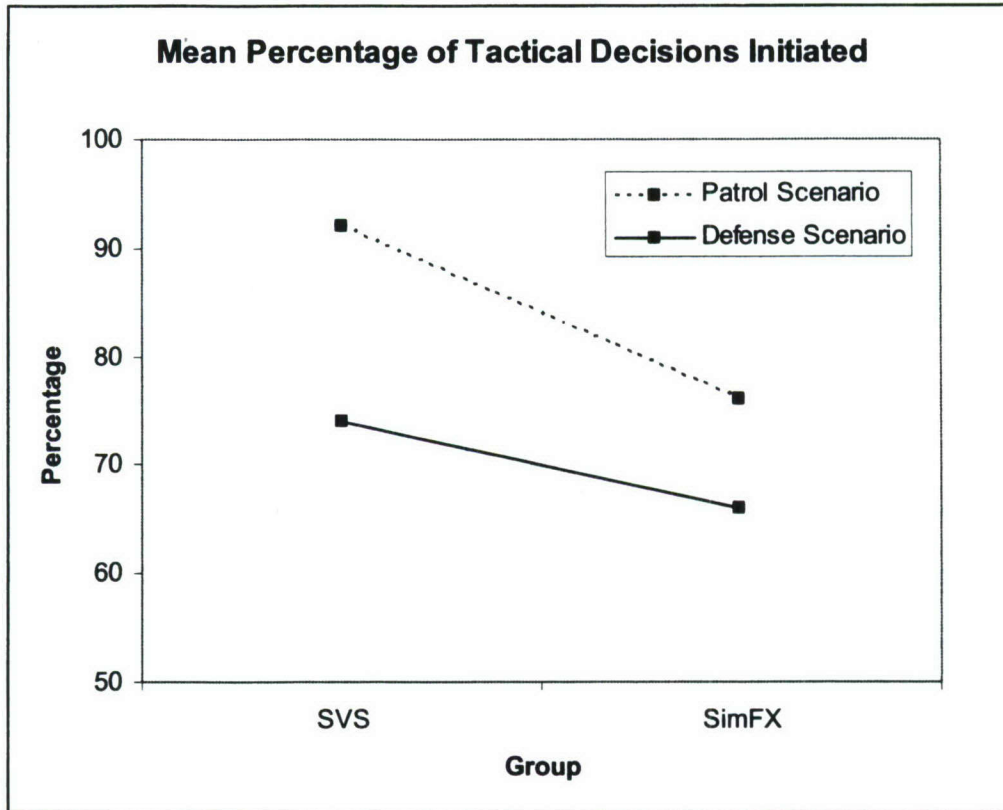
Figure 1. Mean percentage of tactical decisions initiated during scenario execution.

Analysis of Ratings Values of Tactical Decisions. The values that corresponded to the ratings for tactical decisions were analyzed to determine if using different simulations (and, as such, different training methods) had an impact on leaders' tactical decision making. A Mixed Factor Repeated-Measures ANOVA showed that there were no significant differences between groups on ratings values for tactical decisions. However, the same analysis showed that within-group differences across scenarios were significant $F(1, 38) = 5.162$, $p = .029$, but with a relatively weak effect size (eta squared = .120) (see Figure 2). The mean ratings values (and standard deviations) for tactical decisions initiated during the patrol scenario were 10 (.572) and 9.05 (1.46) for the SVS and SimFX groups, respectively. For the defense scenario, mean ratings values were 8.87 (.931) and 9.23 (1.50) for the SVS and SimFx groups, respectively. The interaction between tactical decision ratings values and groups was significant $F(1, 38) = 9.262$, $p = .004$, but with a relatively weak effect size (eta squared = .196) (see Figure 2).

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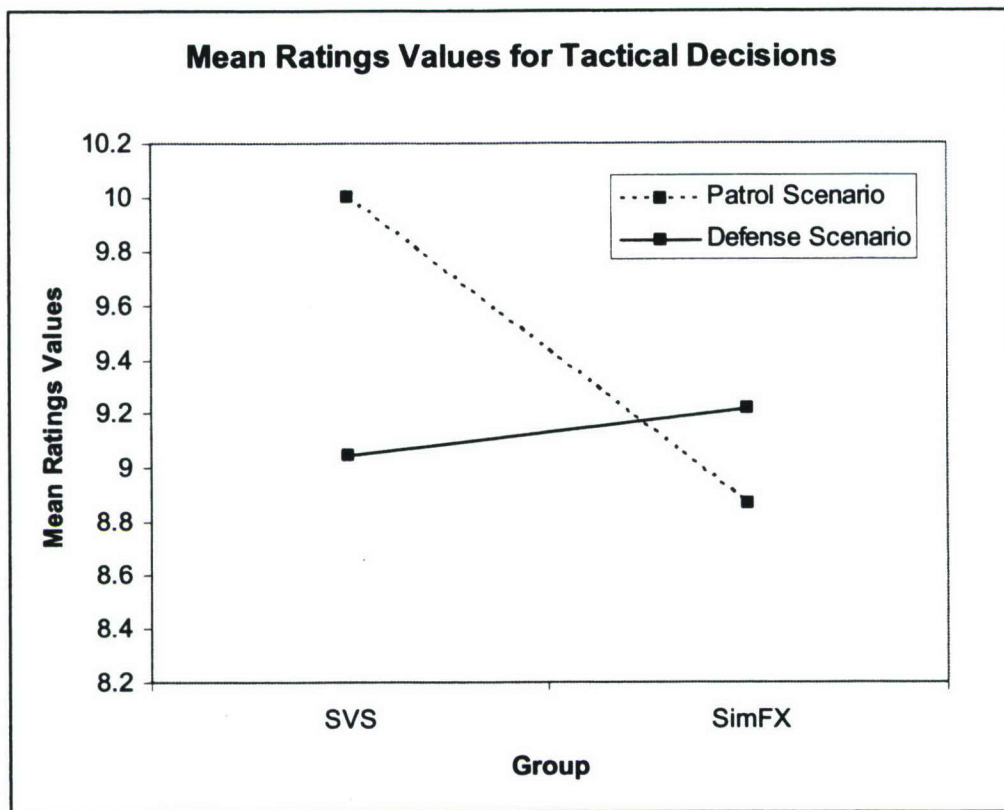
Figure 2. Mean ratings values for tactical decisions initiated during scenario execution.

The significant interaction between tactical decision ratings values and groups necessitated analyses of the simple effects of group on these values for the patrol and the defense scenarios separately. Independent-Samples *t*-tests were conducted to determine if simple effects existed. The difference between groups was significant for the patrol scenario $t(38) = 2.945$, $p = .006$, but not for the defense.

Analysis of Individual Critical Events. The critical events upon which fewer than fifty percent of the leaders based decisions were displayed in Table 3. These events represent those with which leaders had the most difficulty.

Table 3

Critical Events Upon Which Less Than 50% Leaders Based Tactical Decisions

Critical Event	Patrol	Defense
Assign a SUGV to observation point		x
Inform personnel of unidentified vehicle noise		x
Inform personnel of a subordinate's sickness		x
Request assistance to evacuate sick subordinate		x
Use appropriate personnel to evacuate sick subordinate		x
Reconsolidate personnel following evacuation of sick subordinate		x
Inform personnel of unidentified voices		x
Inform personnel of hearing shots fired		x
Request support and update from observation point		x
Inform personnel of ROE update		x
Inform personnel of crowd status		x
Inform personnel of seven dismounted enemy Soldiers approaching		x
Order personnel to open fire on enemy Soldiers		x
Request support for crown control		x
Leave UGV for surveillance	x	
Follow platoon leader's instructions to secure building	x	
Inform personnel of arriving at check-point 5	x	
Inform personnel of arriving at check-point 6	x	
Return to dismount point and inform platoon leader	x	
Request Bradley patrol within village limits	x	
Squad secures unidentified vehicle	x	

The critical tasks shown in Table 4 were those for which leaders received the lowest ratings. These low ratings were a function of leaders making either inappropriate decisions or no decisions in response to the critical events.

Table 4

Critical Events For which Leaders Made an Inappropriate or No Tactical Decision.

Critical Event	Patrol	Defense
Assign a SUGV to observation point		x
Request UAV over flight		x
Report sickness of subordinate		x
Reconsolidate personnel so no Soldier is left alone		x
Request indirect fire on approaching BMPs		x
Inform team leaders of plan to defend against crowd		x
Inform personnel of unidentified vehicle noise		x
Inform personnel of evacuating subordinate		x
Inform personnel not to drink contaminated water		x
Request water resupply		x
Send appropriate personnel to retrieve water		x
Reconsolidate personnel after evacuating subordinate		x
Coordinate water resupply		x
Order Soldiers at observation point to return to squad		x
Inform personnel of voices near observation point		x
Inform personnel of crowd status and brief defensive plan		x
Request support and update from UAV on the observation point		x
Inform personnel of ROE update		x
Inform personnel of seven dismounted enemy Soldiers approaching		x
Order personnel to open fire on enemy Soldiers		x
Request support for crowd control		x
Inform personnel of stolen vehicles	x	
Inform personnel of broken sewer seals	x	
Inform personnel of arrival at check points 3, 4, 5, and 6	x	
Call Bradley forward using appropriate formation	x	
Inform personnel of suspicious activity	x	
leave UGV for surveillance on P4	x	
Use/Reposition a Bradley to keep surveillance on P4	x	
Return to dismount point and inform personnel	x	
Request Bradley patrol within village limits	x	
Squad secures unidentified vehicle	x	

Independent-samples *t*-tests were used to determine if there were significant differences between groups on mean ratings values for each critical event. Table 5 shows the events for which significant group differences existed.

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Table 5

Critical Events for which Significant Differences Between Groups on Mean Ratings Values Existed

Critical Event	SVS Mean	SimFX Mean	t	p	Patrol	Defense
Request UAV over flight	5.08	11.55	6.957	.001		x
Report sickness of subordinate	11.18	7.58	2.521	.018		x
Request indirect fire in BMPs	7.33	11.82	4.975	.001		x
Send appropriate personnel to get water	4.45	8.00	2.436	.021		x
Order Soldiers at observation point to return to squad	7.44	10.48	2.417	.022		x
Inform personnel of stolen vehicle	10.58	4.92	5.871	.001	x	
Conduct patrol in proper sequence	12.00	10.00	2.789	.008	x	
Inform personnel of broken sewer seals	8.67	5.23	2.942	.006	x	
React appropriately to initial enemy contact	11.50	9.00	3.545	.001	x	

Analysis of Leader Perceptions of SVS and SimFX

The SVS and SimFX Leader Perception Questionnaires were developed to document the reactions of leaders to their experiences with the simulations. The SVS questionnaire consisted of 45 total items that were divided among seven subsets. Leaders rated the first 38 items by choosing one response category from a seven-category scale. For questions 39 through 41, leaders were required to answer "Yes" or "No". Leaders rated four additional items by choosing one response category from a five-category scale.

The SimFX questionnaire included 41 total items that were divided among six subsets. Leaders rated the first 38 items by choosing one response category from a seven-category scale, and completed items 39 through 41 by answering "Yes" or "No".

Results of leader ratings on individual items rated on a seven-point scale were described in this section when at least 50 percent of the leaders chose either the lower three or the higher three ratings categories. When this was the case, the results were explained generally and the items were included in tables. Additional items were discussed generally when ratings approached the 50 percent threshold, but were not included in the tables.

Leader Perceptions of the SVS

Overall Training Value of the SVS. At least 50 percent of the leaders in the SVS group chose one of the three highest response categories for six of the seven questions in this subset (see Table 6). These ratings suggest that leaders believed that their experience with the SVS provided them with valuable training and preparation for being an effective squad leader during urban operations. In addition, the majority of leaders believed that they needed more time training with the SVS.

Table 6

Ratings Percentages for Selected Items from the SVS Leader Perception Questionnaire on Overall Training Value

Questionnaire Item	Ratings % Low / High
To what extent did the SVS provide you with an effective virtual training experience?	7 / 77 Not at all / Very much
In your opinion, how desirable is it to use a simulated training exercise such as the SVS to gain experience as an Infantry squad leader?	16 / 76 Not at all / Very
How would you describe the amount of time you trained with the SVS?	8 / 69 Too much / Need more
How challenging was the overall experience provided by the SVS training?	31 / 54 Not / Very
In your opinion, will using the SVS have a valuable impact on preparing you to lead an Infantry squad in your unit?	31 / 54 No value / Great value
In your opinion, will using the SVS have a valuable impact on preparing you to lead an Infantry squad in combat?	24 / 61 No value / Great value

Overall Training Value of SimFX. Only one of the seven items in this subset received high ratings by 50 percent of the leaders in the SimFX group (see Table 7). Ratings for several other items suggested that leaders were ambivalent about the aspects of the overall training value the items represented. While response percentages of ratings did not meet the 50 percent threshold for inclusion in Table 7, leaders' relatively low marks on two items in this subset suggested that they failed to see much value in using SimFX to better understand how a squad is led during urban operations and to prepare for leading a squad in a unit.

Table 7

Ratings Percentages for Selected Items from SimFX Leader Perception Questionnaire on Overall Training Value

Questionnaire Item	Ratings % Low / High
In your opinion, how desirable is it to use a simulated training exercise such as the SimFX to gain experience as an Infantry squad leader?	30 / 54 Not at all / Very

Tactical Training Value of the SVS. This subset included eight questions, six of which were rated relatively high by leaders in the SVS group. These ratings suggest that leaders perceived that the SVS provided them with valuable training on tactical issues. Most notable were the last two items in Table 8 that dealt with the importance of the presence of instructors during training. The distributions of responses for these two items were among the most extreme from the SVS questionnaire.

Table 8

Ratings Percentages for Selected Items from the SVS Leader Perception Questionnaire on Tactical Training Value

Questionnaire Item	Ratings % Low / High
To what extent did your experience with the SVS provide meaningful practice for exercising command and control over squad operations?	8 / 77 Not at all / Very much
To what extent did training with the SVS provide you with opportunities to practice reacting to enemy contact during urban operations?	8 / 54 None / Many
To what extent did your experience with the SVS help you to better understand the influence of METT-TC factors on leading a squad?	23 / 54 Not at all / Very much
To what extent did your experience with the SVS help you to better understand how movement routes must be designated according to the terrain?	24 / 62 Not at all / Very much
To what extent should a qualified instructor be present to provide you with feedback, coaching, and tactical guidance while you use the SVS?	0 / 84 Never / Always
To what extent should a qualified instructor be present to guide you through an after-action review?	0 / 76 Never / Always

Tactical Training Value of SimFX. The majority of leaders in the SimFX group gave relatively low ratings for the questionnaire item that asked whether SimFX provided meaningful practice for understanding movement routes. Higher ratings were assigned by leaders when asked if a qualified instructor should be present for an after-action review (see Table 9).

Table 9

Ratings Percentages for Selected Items from the SimFX Leader Perception Questionnaire on Tactical Training Value

Questionnaire Item	Ratings % Low / High
To what extent did SimFX provide meaningful practice for understanding how movement routes must be designated according to the terrain?	54 / 29 Not at all / Very much
To what extent should a qualified instructor be present to guide you through a SimFX after-action review?	22 / 54 Never / Always

Adaptability and Decision-Making with the SVS. Leaders assigned high ratings to eight of the nine items in this subset. These results suggest that leaders considered the SVS to be effective for training adaptability and decision making, in general. Two questions that inquired about leaders' perceptions of their own ability to adapt during SVS training were among the highest rated. In addition, leaders reported that the SVS training required them to change their initial plan as a function of emerging conditions and threats (see Table 10).

Table 10

Ratings Percentages for Selected Items from the SVS Leader Perception Questionnaire on Adaptability and Decision-Making

Questionnaire Item	Ratings % Low / High
To what extent were you given opportunities to adapt to emerging battlefield conditions during SVS training?	0 / 84 Not at all / Very much
How well did you adapt to emerging battlefield conditions during SVS training?	8 / 92 Not at all / Very well
To what extent will the SVS training prepare you to adapt to emerging conditions in combat?	16 / 61 Not at all / Very much
To what extent did the SVS permit you to train and rehearse the types of decisions an Infantry squad leader must make during urban operations?	16 / 69 Not at all / Very much
To what extent did your experience with the SVS teach you how tactical decisions are made when leading a squad?	31 / 53 Not at all / Very much
How well did you make decisions as a squad leader during the SVS training experience?	8 / 85 Not at all / Very much
To what extent did your experience with the SVS add to your unit training in learning the decisions associated with effectively leading an Infantry squad during urban operations?	23 / 61 Not at all / Very much
To what extent did you change your plan during SVS mission execution as a result of changing conditions and/or emerging threats?	8 / 76 No change / Complete change

Adaptability and Decision-Making with SimFX. Leaders in the SimFX group assigned high ratings to two items in this subset. These items asked leaders about their own adaptability and decision making, as opposed to asking how well SimFX provided them with opportunities to adapt and to implement decisions (see Table 11).

More leaders believed that SimFX permitted them to rehearse squad leader decisions and to make tactical decisions during SimFX scenario execution than those who did not. In addition, more leaders believed that, had they made different decisions during scenario execution, they would not have been more successful. However, leaders' response percentages of ratings on these items did not meet the 50 percent threshold for inclusion in Table 11.

Table 11

Ratings Percentages for Selected Items from the SimFX Leader Perception Questionnaire on Adaptability and Decision-Making

Questionnaire Item	Ratings % Low / High
How well did you adapt to emerging battlefield conditions during SimFX training?	10 / 65 Not at all / Very well
How well did you make decisions as a squad leader during the SimFX training experience?	11 / 67 Not at all / Very much

Realism and Fidelity of the SVS. Leaders assigned high ratings to seven of the 11 items in this subset that dealt with the realism of the SVS environment, the training experience, and issues relevant to using the computer and joystick (see Table 12). Particularly high ratings were assigned by leaders for the realism of physical objects in

the simulated environment, the extent to which leaders were focused on and immersed in the experience of leading a squad during an urban operation, and the extent to which the SVS tasks and battle drills mirrored those they experienced during unit and field training.

Table 12

Ratings Percentages for Selected Items from the SVS Leader Perception Questionnaire on Realism of the SVS

Questionnaire Item	Ratings % Low / High
How captivated or drawn in were you by events and actions presented in the SVS?	8 / 53 Not at all / Completely
How realistically did the SVS portray physical objects in the mission environment?	0 / 85 Not at all / Completely
Were there moments during your experience with the SVS when you felt completely focused on the task of leading a squad?	8 / 85 None / Frequently
To what extent did the scenarios used in the SVS accurately simulate what you experienced during squad-level unit training?	16 / 69 Not at all / Very much
How much were experiences in the SVS environment consistent with your experiences during urban operations field training exercises?	15 / 77 Not consistent / Very Consistent
To what extent did the SVS accurately simulate the tasks and conditions specified in current squad-level battle drills?	8 / 77 Not at all / Very much
Overall, how much could you focus on the squad leader experiences rather than on the computer keyboard and joystick functions?	8 / 85 Not at all / Very much

Realism and Fidelity of SimFX. High ratings were given to five items in this subset from the majority of leaders in the SimFX group. Leaders believed that the conditions of a squad mission in an urban environment were portrayed realistically, and that there were moments when they were focused on the task of being a squad leader. Leaders believed that the patrol and defense scenarios were accurate representations of experiences from squad level unit training, and that the tasks, conditions, and battle drills were realistic. In addition, high ratings were given for the extent to which SimFX described enemy actions during scenario execution (see Table 13).

Table 13

Ratings Percentages for Selected Items from the SimFX Leader Perception Questionnaire on Realism of SimFX

Questionnaire Item	Ratings % Low / High
How realistically did SimFX portray the conditions of a squad mission in an urban environment?	24 / 57 Not at all / Completely
Were there moments during your experience with the SimFX when you felt completely focused on the task of leading a squad?	21 / 65 None / Frequently
To what extent did the scenarios used in the SimFX accurately simulate what you experienced during squad-level unit training?	26 / 51 Not at all / Very much
To what extent did the SimFX accurately simulate the tasks and conditions specified in current squad-level battle drills?	24 / 51 Not at all / Very much
How realistically did SimFX describe actions made by the enemy?	21 / 51 Not at all / Completely

Motivation for Training with the SVS. High ratings were assigned by leaders for the item that asked whether practicing making squad leader decisions was an appropriate reason to use SVS (see Table 14). While leaders' response percentages of ratings did not meet the 50 percent threshold for inclusion in Table 11, many leaders believed that learning combat skills was an appropriate reason for using the SVS. In contrast, when asked whether fun and personal entertainment were appropriate reasons for using the SVS, many leaders' suggested that they were not.

Table 14

Ratings Percentages for Selected Items from the SVS Leader Perception Questionnaire on Motivation for Training with the SVS

Questionnaire Item	Ratings % Low / High
How important is a desire to practice making squad leader decisions a reason for you to want to train with the SVS?	16 / 76 Not at all / Very much

Motivation for Training with SimFX. Leaders believed that practicing leader decisions and learning combat skills were appropriate reasons for wanting to use SimFX (see Table 15). Many of the leaders (though, less than a 50% majority) believed that fun and personal entertainment were not good reasons for using SimFX.

Table 15

Ratings Percentages for Selected Items from the SimFX Leader Perception Questionnaire on Motivation for Training with SimFX

Questionnaire Item	Ratings % Low / High
How important is a desire to practice making squad leader decisions a reason for you to want to train with the SVS?	18 / 53 Not at all / Very much
How important is the desire to learn combat skills a reason for you to want to use SimFX?	27 / 51 Not at all / Very much

Leaders in the SVS group rated four components of SVS fidelity by assigning ratings on a five-point scale (1-Inadequate, 2-Poor, 3-Adequate, 4-Good, 5-Excellent). The four components of fidelity were physical, tactical friendly force, tactical enemy force, and psychological. The percentages of leaders who rated each component of fidelity as adequate or better were 92, 38, 54, and 63 for physical, tactical friendly force, tactical enemy force, and psychological fidelity, respectively. There were no ratings of "Inadequate" given by any leader for any component of fidelity.

Overall Opinion of the SVS Training Experience. The final subset of items included three questions about the extent to which the SVS training taught leaders something new about how a squad leader should conduct Infantry operations, adapt to emerging battlefield conditions, and make appropriate decisions during urban operations. Table 16 shows the results of these items. Fewer leaders reported that the SVS training taught them something new about urban operations. However, when asked more specific questions about adapting to emerging conditions and making appropriate decisions, a large majority suggested that they had learned from the SVS training.

Table 16
Response Percentages for Leaders' Overall Opinion of the SVS Training Experience

Questionnaire Item	%Yes
Did the SVS training experience teach you something new about how a squad leader should conduct Infantry urban operations?	38
Did the SVS training experience teach you something new about how a squad leader should adapt to emerging battlefield conditions?	77
Did the SVS training experience teach you something new about how to make appropriate decisions as a squad leader during urban operations?	92

Overall Opinion of the SimFX Training Experience. Leaders in the SimFX group rated the same final subset of items. Table 17 shows the results of these items. Fewer leaders reported that SimFX taught them something new about urban operations. When asked more specific questions about adapting to emerging conditions and making appropriate decisions, the majority of leaders suggested that they had not learned from training with SimFX.

Table 17
Response Percentages for Leaders' Overall Opinion of the SimFX Training Experience

Questionnaire Item	%Yes
Did the SimFX training experience teach you something new about how a squad leader should conduct Infantry urban operations?	40
Did the SimFX training experience teach you something new about how a squad leader should adapt to emerging battlefield conditions?	43
Did the SimFX training experience teach you something new about how to make appropriate decisions as a squad leader during urban operations?	43

Analysis of Group Differences in Overall Opinion of the SVS and SimFX Training Experiences. In order to determine if there were significant group differences in responses for the three questions about the overall simulation training experience, Pearson Chi-Square analyses were conducted. Results from these analyses suggested that

there were significant differences across groups in ratings for two questions: *Did SVS/SimFX teach you something new about how a squad leader should adapt to emerging battlefield conditions?* (Pearson Chi-square = 4.37, [df = 1], p = .037), and *Did SVS/SimFX teach you something new about how to make appropriate decisions as a squad leader during urban operations?* (Pearson Chi-square = 9.40, [df = 1], p = .002). For both questions, a higher percentage of leaders in the SVS group reported that they were taught something new by the simulation training.

Between-Groups Comparisons of Questionnaire Items. Independent-samples *t*-tests were conducted to determine if significant group differences existed for the mean ratings for each of the 39 questions common to the SVS and SimFX Leader Perception Questionnaires. Table 18 shows the results of the *t*-tests for questions on which ratings differed significantly between groups. Without exception, the ratings for these questions given by leaders in the SVS group were significantly higher than those given by leaders in the SimFX group.

Table 18
Results of Independent-Sample t-tests for the 39 Common Questions from the SVS and SimFX Leader Perception Questionnaires

Questionnaire Item	t	p
1. To what extent did the SVS/SimFX provide you with an effective virtual training experience?	2.300	0.026
3. How would you describe the amount of time you used SVS/SimFX?	2.059	0.045
5. In your opinion, did SVS/SimFX have a valuable impact on helping you to better understand how an Infantry squad is led during urban operations?	2.316	0.025
6. In your opinion, will using SVS/SimFX have a valuable impact on preparing you to lead an Infantry squad in your unit?	2.088	0.042
7. In your opinion, will using SVS/SimFX have a valuable impact on preparing you to lead an Infantry squad in combat?	2.484	0.017
8. To what extent did SVS/SimFX provide meaningful practice for exercising command and control over squad operations?	2.949	0.005
9. To what extent did SVS/SimFX provide you with opportunities to practice reacting to enemy contact during urban operations?	2.830	0.007
11. To what extent did SVS/SimFX help you to better understand the influence of METT-TC factors on leading a squad?	2.160	0.036
13. To what extent did SVS/SimFX provide meaningful practice for understanding how movement routes must be designated according to the terrain?	2.786	0.008
14. To what extent should a qualified instructor be present to provide you with feedback, coaching, and tactical guidance while you use SVS/SimFX?	2.705	0.009
16. To what extent were you given opportunities to adapt to emerging battlefield conditions during the SVS/SimFX exercises?	2.923	0.005
17. How well did you adapt to emerging battlefield conditions during SVS/SimFX?	2.172	0.035
35. Overall, how much could you focus on the squad leader experiences created by SVS/SimFX rather than on computer keyboard functions?	3.170	0.003

Relationships Among Variables

Regression analyses were conducted to determine the impact of biographical factors and decision making style (scores from the three scales of the Decision Making Style Inventory) on tactical decision making and leader perceptions. Pearson bivariate correlations were used to explore any other meaningful relationships between variables. The relationships reported in the section below include only those that were deemed by the authors to be meaningful to the intent of this assessment.

Impact of Biographical Factors. The analyses revealed no significant impact of selected biographical factors on ratings for tactical decision making during SVS and SimFX scenario execution. Regarding the impact of these factors on leader perceptions, those who reported more hours per week playing video games tended to believe that practicing squad leader decisions and learning combat skills were appropriate reasons for using SVS and SimFX to a greater extent than those who reported fewer hours ($r = .321$, $p = .023$).

Leaders who reported a higher number of urban operations in combat tended to have higher scores on the Intuitive scale for the Decision making Style Inventory ($r = .386$, $p = .006$). By contrast, these leaders tended to have lower scores on the Regret-Based Emotional scale ($r = -.313$, $p = .027$).

Younger leaders tended to score higher on the Regret-Based Emotion scale of the Decision Making Style Inventory than did older leaders ($r = -.315$, $p = .023$). Leaders who reported a higher level of computer proficiency scored higher on the Analytic scale ($r = .372$, $p = .007$).

Impact of Decision Making Style on Tactical Decision Making and Leader Perceptions. Bivariate correlations revealed that there were no significant relationships between ratings for tactical decision making and scores for any of the Decision Making Style Inventory scales. In addition, there were no significant relationships detected between decision making style and leader perceptions as represented by ratings from the questionnaires.

Relationship Between Squad Leader Situation Judgment Test and Tactical Decision Making. Leaders who scored higher on the Squad Leader Situation Judgment Test tended to receive higher ratings for tactical decision making during SVS and SimFX scenario execution ($r = .360$, $p = .026$). However, this was true only for the patrol scenario and not for the defense scenario. Consistent with the finding described earlier that leaders were given significantly higher ratings for tactical decisions during the patrol scenario, this lended additional support to the conclusion that the SVS environment was more sensitive to differences in tactical decision making for at least some tasks and scenarios.

Discussion

Equivalent Groups.

We found no significant differences between groups on any item on the Biographical Information Questionnaire, except level of video game proficiency. We had no reason to believe that this difference had any bearing on tactical decision making, or on any other measure. Leaders in the SimFX group reported lower levels of proficiency with video games than leaders in the SVS group. However, when asked if they were able to focus on the task of leading a squad instead of focusing on the joystick and computer functions, 65 percent of the leaders in the SimFX group chose from the highest three ratings categories in response to this question. These results suggested that in spite of their lower level of proficiency, leaders in the SimFX group had no discernable problems interfacing with the simulation or initiating joystick and computer functions.

Decision Making Style

Comparisons of the three scale scores across groups suggested that leaders had equivalent decision making styles. Relatively high Analytic and Intuitive scale scores were expected, as were low Regret-Based Emotional scale scores. This was the case for the three scales.

Leaders' scores on all three decision making style scales tended to be more extreme than the scores of company commanders from our own previous research, as well as scores from college students from Nygren's previous research. We suspected that leaders' scores were different as a function of the training and tasks in which squads are engaged and the dangerous consequences that result when tactical decisions are ineffective. To some extent, the differences between Soldier scores and college student scores were anticipated by Nygren (2000).

We found that younger leaders tended to score higher on the Regret-Based Emotional scale. This makes sense when one considers that, for squad leaders in the Army, age is usually correlated with increased military experience. Leaders with more experience tend to have increased opportunities to implement decisions and experience the consequences of those decisions. In addition, older leaders have more opportunities to overcome any sense of regret by understanding the importance of the mission and the responsibility to execute the mission successfully. This conclusion was supported by the fact that leaders who reported a higher frequency of urban operations in combat tended to score higher on the Intuitive scale, but lower on the Regret-Based Emotional scale. It is understood also that the Warrior Ethos and Army values may be more deeply engrained in older, more experienced leaders.

The scale scores from the Decision Making Style Inventory were not significant predictors of ratings for tactical decision making. This suggested that the inventory was a better indicator of general decision making style, but not very sensitive to tactical decision making during narrowly focused simulated military operations. Had the metric

been more sensitive to these types of decisions, then we would have expected a stronger correlation between tactical decision making ratings and scores on the Intuitive scale, as suggested by Nygren's (2000) previous research. This was not the case for the current research.

Squad Leader Situation Judgment Tests

The Squad Leader Situation Judgment Tests were comprised of relatively short tactical vignettes that required leaders to choose the most effective tactical decisions under the circumstances presented. The vignettes were based on typical situations that squad leaders faced during urban operations against an insurgency force. Leaders who scored higher on these tests tended to receive higher ratings for tactical decision making, regardless of group. However, this was true only for the patrol scenario, and not the defense scenario. We believed that this finding was another indication that leaders knew more about and had more experience with the tactics and effective decisions for patrol missions than for defense missions as a function of training for and experience in the current theatre of operations.

Tactical Decision Making

Percentage of Decisions Implemented. The patrol and defense scenarios were developed to offer leaders practice and experience with the critical events upon which squad leaders based and implemented tactical decisions during counterinsurgency urban operations. Because of the nature of the missions, the defense scenario presented 40 core critical events, compared to 33 presented during the patrol scenario. As such, we expected that leaders would take more time to complete the defense mission successfully. However, this was not the case. Leaders spent equivalent amounts of time on both missions, regardless of group. This meant that if leaders had completed all tactical decision opportunities during both scenarios, then the latencies between decisions during the defense scenario would have been shorter than those during the patrol scenario. Or, leaders would have implemented decisions for a lower percentage of critical events for the defense scenario than for the patrol scenario. We found the latter to be the case. Leaders in the SVS group implemented decisions for a mean of 92 percent of the critical events presented during the patrol scenario, but for only 74 percent for the defense scenario. Leaders in the SimFX group implemented decisions for a mean of 76 percent of the critical events presented during the patrol scenario and for 66 percent during the defense.

Leaders in the SVS group initiated a higher percentage of tactical decisions than those in the SimFX group. This may have been due to the presence of a human observer/controller prompting decisions for the SVS group, compared to the leaders in the SimFX group who were prompted to initiate tactical decisions at key points in the scenario by the software program itself. The consequences for failing to respond to prompts from a human instructor may have had a stronger motivational impact than those linked to a failure to respond to software. Given that the simulations were confounded by the methods used to provide the training, it was difficult to determine whether the

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methods or the simulations themselves produced group differences in initiating tactical decisions.

Ratings for Tactical Decision Making. For leaders in the SVS group, ratings were significantly higher for the patrol scenario than for the defense. Again, we believe this difference was due to the leaders' higher level of experience with patrol missions during training and deployment. Squad leaders who trained for or who were deployed in OEF and OIF tended to conduct many more patrol-oriented, offensive missions than defensive missions. The defense scenario required leaders to make more tactical decisions about personnel, and fewer decisions about combat-related procedures, with which leaders had more experience. Mean ratings values for tactical decision making for leaders in the SimFX group were equivalent for both scenarios.

An additional analysis of the effects of these groups showed that the leaders in the SVS group received significantly higher ratings for tactical decisions than the SimFX group during the patrol scenario execution. We believe this difference should be attributed to the SVS simulation and the corresponding methods used to train leaders. As such, the SVS simulation, when combined with a human observer/controller and a training experience that more closely mirrored reality, had an advantage over the stand-alone system that did not include a human-in-the-loop.

The relatively poor tactical decision performance during SimFX patrol missions may have been the result of the following, as determined by the records of leaders' scenario executions: (a) written essay responses to critical events were not always thoughtful or complete; (b) few leaders utilized the majority of available assets; (c) leaders did not always respond to the prompts provided by the program to recognize and respond to critical events; (d) situation reports to higher and reports requested from lower were infrequent; (e) leaders had to seek useful information actively, as opposed to relying on an observer/controller; and (f) leaders had to rely on written instructions to perform effectively, as opposed to receiving verbal guidance from an observer/controller.

Regardless of group or scenario, leaders tended to have difficulty with making tactical decisions for implementing the use of air and ground controlled robotics assets. Upon questioning leaders about the use of these assets, most reported that they were not given opportunities to use them during training or deployment. However, most leaders recognized the benefits of these assets as a function of their experience with the events during simulation training.

Leaders tended to neglect sending situation reports to higher and requesting reports from lower at appropriate rates, even when leaders were prompted to send and request them. When asked, leaders remarked that Infantry squads communicated information that was directly relevant to the mission. While other information in the mission environment may have been perceived as important to observers, leaders' experiences suggested that communicating certain types of information either up or down the chain of command only served to complicate matters and did not add to the potential success of the overall mission.

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We believe that other important factors affecting tactical decision making were motivationally-based, in part, as a function of the way the simulations were presented. The SVS missions included the use of real time communication with live humans who had an impact on the pace with which the missions were executed and controlled. With these contingencies in place, we believe the SVS leaders were motivated to perform well to a greater extent during execution than the SimFX leaders. Leaders in the SimFX group executed the scenarios in the absence of any of these external motivational contingencies. They were free to apply their knowledge, skills, abilities, and tactical decision making according to any degree of effectiveness they chose, with no immediate negative consequences for ineffective performance on any dimension.

Leader Perceptions of the Value of Training with SVS and SimFX.

Leaders in the SVS group perceived higher overall training value than those in the SimFX group, as evidenced by their ratings on the leader perception questionnaire. The same can be said for perceptions of tactical training value, and for opportunities to adapt and implement decisions. Leaders in both groups believed that the simulations were realistic enough to allow effective training and that the events presented by the scenarios were relevant to their recent experiences during training and deployment.

Leaders in the SVS group perceived a greater need for the presence of an instructor during mission execution and to provide after action reviews. In addition, leaders in the SVS group perceived also that they had learned something new about combat skills and practicing tactical decisions to a greater extent than leaders in the SimFX group. This difference may have been a function of the overall SVS experience.

The perceptions of leaders from both groups about motivation for using the simulations to train were fairly consistent. Leaders' ratings suggested that learning combat skills and practicing tactical decisions were appropriate reasons for training with the simulations, whereas fun and personal entertainment were not. These results were consistent with the views of Infantry leaders who participated in previous training game evaluations (see Beal, 2005).

Comparison of Resource Costs and Benefits

Regardless of the simulation, both groups were presented with similar critical events, given equivalent tactical decision making opportunities, and provided similar amounts of time to execute missions. Yet, there were differences between the percentages of tactical decisions implemented and ratings for tactical decision making. This suggested that, while both the SVS and the SimFX simulations gave leaders opportunities to implement tactical decisions similar to those implemented using larger, more expensive systems, the leaders who trained with the SVS seemed to receive the most benefit. In addition, when the leaders' perceptions of the training experiences were taken into account, it was clear that leaders in the SVS group perceived more training value and learning opportunities than leaders who trained according to stand-alone methods used with SimFX.

On the other hand, the human resources needed to provide an effective SVS training experience far exceeded those needed for SimFX. The ratio of researchers to leaders for the SVS simulation training was four-to-one, whereas the ratio for SimFX was one-to-ten. In the current environment of training limitations and resource constraints, it may be that the stand-alone methods combined with a simulation like SimFX that captures tactical decision performance automatically will provide a more sensible mode of training than the more resource intensive SVS. In contrast, trainers who wish to give leaders effective simulation training experiences that provide more realistic settings and result in greater perceived value and improved tactical decision making may choose a simulation like SVS, regardless of its required training resources.

Conclusions

This research was aimed at addressing a set of questions that emerged during our previous games evaluations and were similar to the ones that drove a series of experiments on the use of immersive simulations to train small unit Infantry leader cognitive skills (Pleban, et al., 2001). They were discussed also in a comprehensive review of the effectiveness of instructional games (Hayes, 2005). The questions are presented below, along with some answers determined by the results from the present assessment.

Can desk-top computer games and simulations be used to train and assess the types of tactical decisions that Infantry leaders initiate under current training and combat conditions?

- We believe they can, and we have seen that squad leaders with combat experience believe they can. However, we recognize that the breadth of tactical decisions that can be trained with these simulations is limited and that the results should be interpreted and generalized with caution. It is not clear whether desk-top computer simulations and games can provide effective training on tasks that are unrelated to the ones trained and practiced during this research.
- We are beginning to understand the extent to which tasks and skills improved upon during simulation training are performed better during any other training exercise where they might be implemented. This has come about as a result of previous research (Pleban & Salvetti, 2003). However, more research in this area needs to be conducted.
- We have shown that the methods used to conduct simulation training affect the way leaders make tactical decisions and the way they perceive the value of the simulation and the overall training experience. Because the simulations used for this assessment were confounded with methods unique to each, we cannot determine whether the simulation technology itself impacted tactical decision making performance and leader perceptions. We are conducting research currently to address this issue.

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Can lower-fidelity, two-dimensional (constructive) systems provide tactical decision making opportunities similar to the ones provided by higher-fidelity, three-dimensional (virtual) systems?

- We have seen that lower fidelity systems can provide tactical decision making opportunities equivalent to higher fidelity ones. However, we believe it is the Soldier or leader who determines whether to implement effective tactical decisions, regardless of the opportunities presented and the level of technology provided by the simulation. We also believe that a human instructor can have a relatively strong impact over the leaders who use simulations to practice tactical decision making. Given that instructors can guide training using lower-fidelity systems, we conclude that these systems can provide effective tactical decision making opportunities as well as high-fidelity ones under similar circumstances. The resource benefit of lower-fidelity systems is that they can cost less to develop, produce, and implement.

- Because the SVS and SimFX simulations were linked to the specific methods used to employ them, we do not know the extent to which the methods of application or the simulations themselves account more for the leaders' perceptions of the training experience. We believe it is an interaction of both of these factors.

Can lower-resource, "stand-alone" simulation training methods allow tactical decision making similar to higher-resource, instructor-facilitated methods of training?

- We believe that stand-alone systems provide a lower level of training quality compared to instructor-facilitated training. We have seen from this assessment that when leaders trained with a stand-alone system, their tactical decision making was less effective during missions with which they were familiar, and that they perceived less training value. During previous training games evaluations, when performance on cognitive skills (e.g., tactical decision making, adaptability) did not differ between stand-alone and more resource intensive simulation training experiences, leaders still perceived less overall training value from stand-alone experiences.

- Perceived effectiveness appears to be linked, in part, to an individual leader's motivation when external contingencies to perform well exist in the training environment. While stand-alone systems and methods can provide equivalent *opportunities* to those provided by higher resourced systems and methods, it is most often the participating leader's individual level of motivation that dictates the quality of the experience with stand-alone systems. Highly motivated leaders tend to perform to the highest level of training that a simulation can provide, whereas leaders with little motivation would receive less value from a training tool with the best capabilities because they would not always seek out and utilize those capabilities.

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- We continue to adhere to the conclusion that the highest level of training, regardless of the tool being implemented, results when a qualified instructor is present to communicate the purposes for training, offer feedback on performance, conduct after-action reviews, and serve as an external monitor of motivation and assessor of performance. We would argue that, in the absence of a qualified instructor, learning can and does occur. However, any learning that does occur cannot be assessed for appropriateness without comparison to a known expectation or standard by one who is qualified to do so.

Are there discrepancies between Infantry leaders' perceived value and efficacy of desk-top simulation training and their actual tactical decision making performance when using these simulations?

- During this assessment, leaders tended to overestimate their skills and tactical decision making performance. These are typical biases that we have seen during previous research with training games and simulations when we have compared self-ratings with ratings from researchers and subject-matter experts, and with performance measures captured automatically.
- Leaders in both groups rated their own ability to make decisions and to adapt to changing conditions higher than their actual performance suggested. Yet, ratings for overall training value of the SimFX simulation were lower compared to those given for the SVS. Thus, when considering tactical decision making as one indicator of training value, we have seen that under some conditions, perceptions of training value can represent reality accurately while perceptions of performance may not.

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APPENDIX A

Biographical Information Questionnaire

Print your full name_____

Please fill in the blanks or circle the appropriate responses for each item below.

1. What is your age? _____ Years

2. MOS _____

3. Rank _____

4. Time in service   Years _____   Months _____

5. Have you had <u>combat experience</u> as a squad leader during urban operations?

   _____ Yes _____ No

   If you answered yes, then how many urban operations did you complete as a squad leader?   0   1   2   3   4   5   6   7   8   9   10   11   12+

   If more than 12, then how many?_____

6. Your level of proficiency in using computers is:
1	2	3	4	5	6	7
low			average			high

7. How many hours per week do you use computers? _____ hours per week

8. How many times in the last year have you used Army simulations?
   0   1   2   3   4   5   6   7   8   9   10   11   12+
   If more than 12, then how many?_____

9. How often have you trained at the McKenna MOUT site (not including demos)?

   _____ not since basic training   _____ 1-3 times   _____ 4-6 times

   _____ More than 7 times

10. How many hours per week do you play video games? _____ hours per week

11. Your level of proficiency in playing video games is:
1	2	3	4	5	6	7
low			average			high

APPENDIX B

Decision-Making Style Inventory

Name_____

We are interested in how you typically go about making decisions. Think about different situations and contexts in which you have made decisions recently. Then, using the 6-point scale shown below, indicate the degree to which you agree or disagree with each numbered statement. Keep in mind that <u>there are no right or wrong answers</u> to any of these items, because there is no single "best" way to make every decision. It is important that you try to answer all questions. However, if you feel uncomfortable with any item, you may choose to omit it.

1	2	3	4	5	6
Strongly Disagree	**Moderately Disagree**	**Slightly Disagree**	**Slightly Agree**	**Moderately Agree**	**Strongly Agree**

1 _____ I feel that if I plan my decisions carefully I will make good decisions.

2 _____ In spontaneous decision situations I usually find that I have good intuitions.

3 _____ I think that I could keep myself from worrying later if I had made a bad decision.

4 _____ In making decisions I first try to make a mental list of all the factors or attributes that will be important to my decision.

5 _____ I can get a good "feeling" for most decision situations very quickly.

6 _____ I sometimes spend too much time hesitating before making decisions.

7 _____ Before I make a decision, I like to figure out the most efficient way of studying it.

8 _____ I feel that I have a knack for making good, quick decisions.

9 _____ Before I make a decision, I think about whether others will approve or disapprove of it.

10_____ I'm very rational when it comes to evaluating risky options.

11_____ I think that relying on one's "gut feelings" is a sound decision making principle.

12_____ I tend to be someone who worries a lot over decisions I've made.

13_____ In making decisions I first make a careful initial estimate of the situation.

14_____ There are many common sense "rules-of-thumb" that I know of that usually lead to good decisions.

15_____ After making a decision, I find that I often go back and re-evaluate the situation.

16_____ I try to pay attention to past information in making new decisions.

17_____ Sometimes decisions, even important ones, are not difficult to make because they just "feel" right.

18_____ I have trouble putting the results of disappointing decisions I've made behind me.

19_____ A good rule of thumb is that the more information I have in making a decision, the better that decision will be.

20_____ Simple decision rules usually work best for me.

21____I rarely rehash old decisions I've made.

22____In making decisions I try to evaluate the importance of each piece of information in the decision process.

23____When forced to make a quick decision, I find that information that readily comes to mind is usually the most useful in making a choice.

24____Worrying about future decisions that I have to make is something I often do.

25____I always try to be fully prepared before I begin working on making a decision.

26____My first reaction to a decision situation usually turns out to be the best one.

27____Many times when I look back on a choice I've made, I wish that I would have put more effort into evaluating the alternatives.

28____In making decisions I try to examine the importance of the good and bad points of each alternative.

29____If I can't decide what to do, I go with my "best guess".

30____When I find out that I've made a bad decision I feel a lot of regret.

31____I like to take a rational, systematic approach to making decisions.

32____When making decisions, my first instinct usually turns out to be best.

33____If I were gambling at a casino I would prefer to play simpler games like slot machines where you don't have to concentrate on playing complex strategies.

34____My best decisions are those for which I've carefully weighed all of the relevant information.

35____I let my intuition play a big part in most decisions I make.

36____I generally don't make very good decisions under time pressure.

37____I generally rely on careful reasoning in making up my mind.

38____I often rely on my first impression when making a decision.

39____I sometimes get "butterflies" in my stomach when I have to make decisions.

40____I like to make decisions in an orderly manner.

41____I rely on my intuition in making many of my personal decisions.

42____After making a decision I sometimes worry about the regret I'll feel if it the outcome turns out to be a bad one.

43____Most important decisions in life are complex and need to be evaluated in a systematic way.

44____I find that my best decisions usually result from using the "quick and easy" approach rather than the "slow but sure" method.

45____Unexpected bad outcomes have a greater impact on me than do unexpected good outcomes.

Squad Leader Situation Judgment Pre-Test

Print your full name_____

Instructions:
You will read a series of combat situations. Choose the **best** response to the given situation. In each situation you are the squad leader confronted with a problem. You should consider each of the situations as independent from one another.

Each situation is a matter of life and death; that is, you must respond within seconds or friendly Soldiers will likely die. You DO NOT have time to take multiple actions; you can only choose **one** of the available options as your **best** response. Please select the action you would take immediately, knowing that lives could depend on your decision.

Circle the letter of the *best* response.

1. While on a mission to clear several buildings your lead team enters a house and walks into a trap. The enemy has opened fire inside the house and you are forced to leave the building. You try to call for a Bradley Fighting Vehicle to provide support, but radio communications have failed. What do you do now?

   a. Withdraw from the area until radio communications can be reestablished.
   b. Immediately ask your TLs how much ammo they have left to determine resources you have available.
   c. Look for a different way into the house that would take the enemy by surprise.
   d. Send a runner to link-up with an adjacent unit for support.
   e. Task a portion of your element to suppress the house while you lead the assault element to accomplish your mission.

2. Your men have been fighting on foot for the past 10 days with no more than 2 hours of sleep per night. During a brief period of rest PFC Smith becomes delirious and begins asking where his dog from home is. Several of the guys

assist in calming him down. You then receive orders to move out immediately. What do you say to your men who have just witnessed this situation?

a. "We have orders to move out, follow me."
b. "I know this is rough, but we've got a job to do. Let's get it done."
c. "I know you're tired, but I'm counting on you. I know you'll do your best as always. We can pull through if we do this together."
d. "SPC Jones, give PFC Smith a hand. We've got to move."
e. "We must pull it together men. We can rest when we get to a more secure location. Right now I need you to give me 100%."

3. Your mission is to secure a three-story building and provide overwatch on a key intersection in order to provide cover for follow-on troops. Time is of the essence because the other unit should be moving through the intersection in approximately 10 minutes. The battalion intelligence officer just reported possible enemy activity in the building across the street. How do you respond?

a. Radio Higher and request another unit be sent to secure the building across the street.
b. Prepare to clear the building across the street.
c. Secure the target building first in order to set up the overwatch team and then send an element to clear the second building.
d. Execute a simultaneous assault on both buildings.
e. Position an element to suppress the building across the street with small arms if necessary, and then secure the target building. Then tell your men to overwatch both the intersection and the second building.

4. As you are moving to link up with another squad you pass a church. A small group of women and children come running out toward you. You are aware that many civilians have deserted the area and it seems odd that they are here in the open. What do you do?

a. Find available cover and concealment and prepare to defend yourselves.
b. Remind your Soldiers of the Rules of Engagement.
c. Order the civilians to "STOP" and put their hands in the air.
d. Fire a warning shot in the air to get the group's attention.
e. Tell Soldiers to aim their weapons at the group, but not to fire unless the group proves to be hostile.

5. While engaged in fighting with insurgents in a small town you hear machine gun fire increasing several blocks away. You are currently positioned in a one-story concrete building in the middle of the block. You are one of 3 squads in the immediate vicinity. What action do you take?

    a. Radio Higher HQs to provide a SITREP.
    b. Check the ammo and equipment status of your men.
    c. Contact each of the other squads and let them know what you're hearing; ask if they have any further information.
    d. Continue to pull security and await further instructions.
    e. Do a map recon and tentatively plan a safe and efficient route that could move your unit to where the action is.

6. You are the 1st Squad squad leader and are moving toward your link-up point when you look down an alley and see 2nd Squad moving in the opposite direction from the target area. You received no radio communications about any changes to the original plan. What action should you take?

    a. Radio your fellow squad leaders in the vicinity to find out what's going on.
    b. Radio Higher HQs and request an update on the link-up point.
    c. Set up a security halt and send two men down the alley to find out what is going on.
    d. Drive on with your original mission to the link-up point.
    e. Change your unit's direction of movement in order to intercept the adjacent squad and find out what's going on face-to-face.

7. While moving toward an intersection that you are to secure, your unit receives small arms fire from the second story window of a 2-story building you are approaching. Movement is also detected on the lower level. It was thought that the buildings were deserted, but Higher now orders you to destroy enemy insurgents in any of the 6 buildings along your way to the intersection. What instructions do you provide to your TLs?

    a. Remind them of Rules of Engagement.
    b. Stop and secure the area.
    c. Talk to the locals as we pass and ask for information about suspicious activity.
    d. Assault the building quickly before the enemy disperses.
    e. Keep personnel together and keep others informed of where you are and what you encounter.

8. You are on patrol in BFVs. You are in the lead BFV, while your Bravo TL is in another BFV, 600 meters behind you. Midway through the patrol, his vehicle is attacked by RPG and small arms fire. He reports his situation to you. What is your response?

   a. Reply, *"Roger, continue to develop the situation."*
   b. Go back and assist to fight off the attack
   c. Call for reinforcements.
   d. Find some cover and radio your commander.
   e. Search and find the insurgents.

9. You just cleared a road leading into a city that may be filled with enemy insurgents. You are approaching a key area where concealment is difficult. You are using smoke to mask your movements, but have inhibited your ability to monitor enemy actions and responses. You receive enemy fire. What would you do?

   a. Radio your platoon leader for any new information about enemy activity in the town.
   b. Direct an overwatch/sniper team into a position in a nearby building to see over/past your smokescreen to engage any observed enemy.
   c. Use aerial command and control elements to scout out enemy activities.
   d. Wait until dark and recon the site.
   e. Request armored vehicles.

10. Your three vehicle convoy has been conducting a presence patrol on the outskirts of your unit sector. Approximately 200 meters to your immediate front, you hear and see what seems to be a hasty ambush being executed on coalition flatbed and cargo trucks. What actions do you take?

    a. Radio in a quick SALUTE report to higher headquarters and monitor the situation from a distance. You might cause more confusion if you rush to the convoy's aid.
    b. Issue a quick FRAGO to your patrol on how you might deploy in support of the operation if needed.
    c. Place your vehicles in a flank position in order to coordinate indirect fire on the insurgents.
    d. Immediately pull 360 degree security. It's possible that the commotion up ahead is a distraction or baited-ambush. The real ambush may be designed for you when you move in to support.
    e. Immediately deploy to support the unit under attack while reporting your actions to higher headquarters enroute.

Squad Leader Situation Judgment Post-Test

Print your full name_____

Instructions:
You will read a series of combat situations. Choose the **best** response to the given situation. In each situation you are the squad leader confronted with a problem. You should consider each of the situations as independent from one another.

Each situation is a matter of life and death; that is, you must respond within seconds or friendly Soldiers will likely die. You DO NOT have time to take multiple actions; you can only choose **one** of the available options as your **best** response. Please select the action you would take immediately, knowing that lives could depend on your decision.

Circle the letter of the *best* response.

---

1. While getting ready to enter a two-story house that you know has wounded enemy inside, you note that there is a front door, a front window with bars, and a side window. One of your fire teams is running low on ammo. You have just received fire from inside the building. What action do you take?

   f. Send an element to recon additional information about the house.
   g. Assemble your TLs to assess situation and discuss options.
   h. Instruct your TLs to position themselves at the possible exits and wait for the enemy to move.
   i. Take a quick assessment of squad equipment to see if you have anything capable of making an explosive breach.
   j. Isolate the house and have your interpreter order the inhabitants to lay down their weapons or you will be forced to demolish the house.

2. The squad's mission is to clear and secure two buildings and await further orders. You have secured your objective and then you hear that another unit down the street has stumbled into a hostile situation and has sustained several casualties. What do you do?

   a. Radio Higher HQs for permission to leave your building and provide support to the other unit.
   b. Send half of your unit down the street and leave half at your objective.
   c. Radio the other unit and tell them you're on the way.
   d. Maintain your unit in a security posture. If you're needed down the street, someone will inform you.
   e. Start task organizing your unit in order to send an element to assist down the street, if needed.

3. After several hours of defending your position within a two-story building from snipers and rebel insurgents, a lull in the fighting occurs. Radio communications indicate that a small group of five or six insurgents are in the vicinity (4-5 blocks away) and are moving in your direction. What do you do?

   a. Radio Higher HQs for more information and guidance.
   b. Inform your TLs of the possible new threat in order to keep them aware.
   c. Check the ammo/water/equipment status of your unit.
   d. Double check that your SAWs are positioned in the best locations to cover the ingress routes to your location.
   e. Position men in observation posts outside of the building in order to provide early warning.

4. Your unit's task is to breach and secure a foothold in Building #1. Your support element, tasked with suppressing the building, throws smoke in order to obscure the assault team's entry. As the assault team leader enters through a window he encounters a booby-trap and is KIA. Another member of the assault team appears disoriented from the blast, stalling your breach into the building. What do you do?

   a. Call for a medic, throw more smoke, and pull the casualties to a safe location away from the building.
   b. Order one man to tend to the disoriented man and then lead the rest of the assault element into the breach.
   c. Look for an alternate entrance into the building.
   d. Bypass the casualties and send the assault team into the breach.
   e. Report the casualties to Higher HQs and request another unit to help support your breach mission.

5. During an ambush, your squad has been separated from the platoon. You start to receive small arms fire and move to a damaged concrete building for cover. Your M249 squad automatic weapon (SAW) gunner begins to lay down suppressive fire but this only causes the enemy fire toward your location to intensify. You believe that the rest of your platoon is moving to the east, but radio communications is unreliable. What action do you take?

    a. Order your SAW gunners to shoot only if they have an exact location on the enemy.
    b. Attempt to establish radio communications to find out where the rest of your unit is located.
    c. Send two men to determine if they can locate the rest of your platoon.
    d. Move the entire squad to the east, toward where you believe the rest of the platoon is located before the enemy pins you down.
    e. Check your security perimeter and remain where you are. The platoon is probably looking for you and attempting to regain contact.

6. While on patrol at 0200 you pass a set of government buildings for the third time. A call comes in from Higher telling you to report back to base right away. One of your subordinates says, *"Sir, there is a delivery van that wasn't there before."* You haven't had any incidents in the last week, and the incident the week before was only a small group of rioters who were unhappy about the new curfew. What do you do?

    a. Comply with orders and head back.
    b. Radio Higher for permission to search or destroy the vehicle.
    c. Stop the unit and send an element to assess the vehicle.
    d. Note the location of the vehicle and report it to the S-2; ask if vehicles were used in neighboring villages to attack government buildings.
    e. Provide SITREP to Higher and request instructions.

7. When returning to your compound after a routine patrol the civilian traffic in front of you is backed up. Your unit is traveling in reinforced HMMWVs. You notice several groups of children along the side of the road who are waving to you. The lead vehicle begins to move when an explosion occurs in front of it. The children and civilians along the road are screaming. You receive small arms fire and realize that the enemy is firing from somewhere behind where the children are grouping together. How do you respond?

    a. Order your men to break contact.
    b. Move your unit out of the kill zone.
    c. Find out if your men have sustained any injuries.
    d. Request reinforcements.
    e. Dismount the squad from its current location and have the Soldiers move toward the firing.

8. You are patrolling on foot with several local police in training attached to your unit. The buildings in the area are mostly 3-story and made of concrete. As you move past an alleyway fire breaks out from down the alley and overhead. Insurgents pop up on rooftops as your men scramble to return fire. In the meantime the local police huddle together near the wall of a concrete building. What action do you take?

   a. Run to the police and tell them to spread out.
   b. Yell to your men to instruct the police what to do.
   c. Focus on returning fire and engaging the insurgents.
   d. Question the police trainees to determine if they knew this was an ambush.
   e. While seeking cover, physically grab the police and move them to cover.

9. Your squad's mission was to clear and secure a building on the outskirts of town. You have successfully completed your mission, your men are resting, and you are monitoring the radio. You hear gunfire and another squad leader reports that his squad is being attacked. How should you respond?

   a. Continue to monitor the radio for further information.
   b. Alert your squad and go to 100% security.
   c. Begin preparation for your squad to assist the other squad.
   d. Plan to leave a fire team to secure your building in the event you are directed to assist the other squad.
   e. Conduct a terrain analysis of routes to reach the other squad.

10. Your squad is advancing into possible hostile territory. It is 0100. You hear noises and people start running away from your location. What do you do?

   a. Move quickly and attempt to halt fleeing people.
   b. Advance at a slow and measured pace until you are certain of what is ahead
   c. Call helicopters in to scan the area using thermal sights.
   d. Fire three warning shots.
   e. Call your adjacent squad to see if they can block people from running away.

APPENDIX E

Scenario Development

The scenarios were developed by Army subject-matter experts using Field Manuals (FM) 7-8, Department of the Army (DA, 1992) and 3-21.71 (DA, 2002) as reference materials. The basis for development of the scenarios was drawn from a report by Wampler, Blankenbeckler, and Dlubac (2004). In addition, the scenario developers incorporated lessons learned from current tactics used in Operation Iraqi Freedom (OIF) and information from interviews with OIF combat veterans.

There were two scenarios developed in support of this experiment: patrol and defense. In the patrol scenario the leader had two Bradley Fighting Vehicles attached to him to provide fire support and armor protection, if needed. The leader had also the use of a TALON unmanned ground vehicle with cameras mounted, but no weapons. The squad was part of a platoon with four BFVs attached. Two squads performed presence patrols, with one moving to the west of the village, and with the leader's squad moving to the east of the village. A third squad provided protection for the Bradley Fighting Vehicles at the south end of the village. The rules of engagement dictated that the Bradley Fighting Vehicles could not move through the village, but they could move on the outskirts of the village. They could fire also into the village on the squad leader's command.

During execution for the patrol scenario the squad leader was faced with events like seals broken on the sewer system, two stolen vehicles (a white SUV and a police car), suspicious activity reports from the other squad about a building outside his sector, an enemy Toyota pickup truck with a .50 caliber machinegun mounted in the bed, evacuating casualties suffered during the engagement of the technical vehicle, using the Bradley Fighting Vehicles to engage the technical vehicle, evacuating wounded with the Bradley Fighting Vehicles, broken down Bradley Fighting Vehicles (e.g., thrown track), suspicious activity in a particular building, clearing the building, sighting a stolen police car, reports from the other squad of sighting a stolen SUV and its subsequent destruction as a result of an improvised explosive device, and hostile civilians inside the town. The squad leader reported crossing all checkpoints, of which there were five. The scenario was designed to last about 45 minutes.

In the defense scenario the participant assumed the role of leader of a dismounted Infantry rifle squad occupying a two story, eight-room building in a small village based on the McKenna MOUT site at Fort Benning, Georgia. The leader's immediate tasks were to defend the building and to place an observation post 300 meters to the front of the building. The squad was part of a larger force consisting of one dismounted Infantry platoon. The observation post placement was directed by the platoon leader in the operations order that was given the participating leader at the beginning of the exercise. The operations order dictated the rules of engagement.

During the mission execution the participating leader had to face hostile civilians leaving a town meeting at the church and moving toward the building being occupied by the leader and his squad. Threats included an armed civilian who may have fired upon the squad, a dismounted enemy squad moving from the north toward the leader's observation post, two Soviet style BMP Infantry fighting vehicles approaching the village from the north, snipers, sick squad members with needs for treatment and evacuation, and improvised explosive devices placed in strategic locations throughout the town. Mission execution for the defense scenario was designed to last approximately 45 minutes.

PATROL SCENARIO TACTICAL DECISION RATING SCALE		
Tactical Decision Ratings		
Failed to recognize the need to respond - as result did nothing.	1	
Recognized need to respond - did not respond.	2	
Recognized need to respond, implemented poor decision - results negative.	3	
Recognized need to respond, implemented poor decision - results positive.	4	
Recognized need to respond, implemented appropriate response - results negative.	5	
Recognized need to respond, implemented appropriate response - results positive.	6	
Prompt - prompted by O/C to respond (to be combined with other rating)	PR	
Not applicable	na	
Critical Event		
1. Squad arrives at correct dismount point.		**Rating**
1.a. SL informs TLs of intell update (stolen vehicles).		
1.b. SL conducts patrol as planned (proper route/sequence).		
1.c. SL informs PLs of CP 1.		
1.d. SL informs TLs of broken sewer seals.		
1.e. SL informs TLs of suspicious personnel reported by first SL.		
1.f. SL continues patrol as directed.		
1.g. SL informs PL of CP 3.		
2. SL informs PL of CP 4.		
2.a. SL properly reacts to initial enemy contact.		
2.b. SL calls Bradleys forward using appropriate formation (one goes, one follows).		
2.c. SL informs PL of enemy contact.		
2.d. SL properly reacts to Bradley hitting mine.		
3 SL reports batle damage assessment (Bradley) to PL.		
3.a. SL issues instructions to Bradleys.		
3.b. SL continues patrol in proper sequence.		
3.c. SL informs PL of suspicious activity in bldg P4.		
3.d. SL informs PL of CP 5.		
3d. 1 Option leave UGV for surveliance on P4		
3d. 2 Option Use/Reposition a Bradley to keep surveliance on P4		
3.e. SL follows PLs instructions to continue patrol.		
4. SL formulates and informs TLs of plan to search P4.		
4.a. SL informs PL of weapons found.		
4.b. SL followed PLs instructions to secure weapons.		
4.c. SL informs PL of CP 5.		
4.d. SL informs PL of CP 6.		
4.e. SL returns to dismount point and informs PL.		
5. SL formulates and informs TLs of plan to secure vehicle in his sector.		
5.a. SL request the UGV to inspect the vehicle.		
5.b. SL plans for a security and manuver element.		
5.c. SL informs TLs of explosion.		
5.d. SL request Bradley support within village limits.		
5.e. Squad secures vehicle.		

DEFENSE SCENARIO TACTICAL DECISION RATING SCALE	
Tactical Decision Ratings	
Failed to recognize the need to respond - as result did nothing.	1
Recognized need to respond - did not respond.	2
Recognized need to respond, implemented poor decision - results negative.	3
Recognized need to respond, implemented poor decision - results positive.	4
Recognized need to respond, implemented appropriate response - results negative.	5
Recognized need to respond, implemented appropriate response - results positive.	6
Prompt - prompted by O/C to respond (to be combined with other rating)	PR
Not applicable	na

Critical Event	Rating
1. SL emplaced OP as directed w/ appropriate personnel.	
1.a. SL assigned SUGV to OP.	
1.b. SL positions himself with short team.	
2. SL informs personnel of crowd leaving church.	
3. SL informs personnel of vehicle noises heard by OP.	
3.a SL request UAV over flight.	
4. SL reports Pvt. Jones sickness.	
4.a. SL uses appropriate personnel to EVAC Pvt. Jones.	
4.b. SL reconsolidates personnel ensuring no one is left alone.	
5. SL request permission to pull in OP	
5.a. SL request indirect fire on BMPs.	
5.b. SL informs personnel of crowd, vehicle, and Pvt. Jones status.	
6. SL informs TLs of plan to defend against crowd.	
7. SL informs personnel of vehicle noise stopping.	
8. SL informs personnel of Pvt. Jones being EVACed to BN CCP.	
9. SL Informs squad not to drink water - request water resupply.	
9.a. SL request water resupply.	
9.b. SL sends appropriate personnel to get water.	
10. SL informs personnel of seven enemy Soldiers dismounting vicinity of OP.	
10.a. SL request indirect fire on vehicles and dismounted enemy Soldiers.	
11. SL informs personnel of 3rd PLT receiving sniper fire.	
12. SL informs personnel of Pvt. Smith's sickness.	
12.a. SL request assistance EVACing Pvt Smith.	
12.b. SL uses appropriate personnel to EVAC Pvt. Smith.	
12.c. SL reconsolidates personnel after EVACing Pvt. Smith	
12.d. SL coordinates for water resupply.	
13. SL orders OP to return to squad location.	
13.a. SL Informs personnel of voices in vicinity of OP.	
13.b. SL informs personnel of shots heard in vicinity of OP.	
13.c. SL informs personnel of crowd status and briefs defensive plan.	
13.d. SL Informs personnel of OP zeroing their systems.	
13.e. SL request support and update from UAV on the OP.	
14. SL informs personnel of ROE update.	
14.a. SL informs personnel of crowd status and initiates defensive plan	

14.b. SL informs personnel of seven enemy soldiers approaching from woodline.	
14.c. SL orders squad to fire on approaching enemy soldiers.	
14.d. SL denies permission to engage crowd.	
14.e. SL request support for crowd control.	

APPENDIX H

SVS Squad Leader Perception Questionnaire

Print your full name_____

Your responses to items in this questionnaire should be based on your experience training as a squad leader with the Soldier Visualization System (SVS). Respond to the following questions by marking an "X" in the appropriate box of the 7-point scale.

Part 1. Overall Training Value of the SVS

1. To what extent did the SVS provide you with an effective virtual training experience?

```
|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT      VERY MUCH
```

2. In your opinion, how desirable is it to use a simulated training exercise such as the SVS to gain experience as an Infantry squad leader?

```
|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT      VERY
DESIRABLE       DESIRABLE     DESIRABLE
```

3. How would you describe the amount of time you trained with the SVS?

```
|____|____|____|____|____|____|
TOO MUCH        RIGHT AMOUNT  NEED MORE
TIME            OF TIME       TIME
```

4. How challenging was the overall experience provided by the SVS training?

```
|____|____|____|____|____|____|
NOT             MODERATELY    VERY
CHALLENGING     CHALLENGING   CHALLENGING
```

5. In your opinion, did the SVS have a valuable impact on helping you to better understand how an Infantry squad is led during urban operations?

```
|____|____|____|____|____|____|
NO              SOME          GREAT
VALUE           VALUE         VALUE
```

6. In your opinion, will using the SVS have a valuable impact on preparing you to lead an Infantry squad in your unit?

```
|____|____|____|____|____|____|
NO              SOME          GREAT
VALUE           VALUE         VALUE
```

7. In your opinion, will using the SVS have a valuable impact on preparing you to lead an Infantry squad in combat?

```
|_____|_____|_____|_____|_____|_____|_____|
      NO                SOME              GREAT
    VALUE              VALUE              VALUE
```

Part 2. Tactical Training Value of the SVS

8. To what extent did your experience with the SVS provide meaningful practice for exercising command and control over squad operations?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL           SOMEWHAT          VERY MUCH
```

9. To what extent did training with the SVS provide you with opportunities to practice reacting to enemy contact during urban operations?

```
|_____|_____|_____|_____|_____|_____|_____|
      NO                SOME              MANY
 OPPORTUNITIES     OPPORTUNITIES     OPPORTUNITIES
```

10. To what extent did your experience with the SVS provide meaningful practice for understanding how squad-level fire control measures are executed?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL           SOMEWHAT          VERY MUCH
```

11. To what extent did your experience with the SVS help you to better understand the influence of METT-TC factors on leading a squad?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL           SOMEWHAT          VERY MUCH
```

12. To what extent did your experience with the SVS provide meaningful practice for understanding how squad-level movement to contact is controlled?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL           SOMEWHAT          VERY MUCH
```

13. To what extent did your experience with the SVS provide meaningful practice for understanding how movement routes must be designated according to the terrain?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL           SOMEWHAT          VERY MUCH
```

14. To what extent should a qualified instructor be present to provide you with feedback, coaching, and tactical guidance while you use the SVS?

NOT AT ALL REQUIRED			SOMEWHAT REQUIRED			VERY MUCH REQUIRED	

15. To what extent should a qualified instructor be present to guide you through a SVS after-action review?

NOT AT ALL REQUIRED			SOMEWHAT REQUIRED			VERY MUCH REQUIRED	

Part 3. Adaptability and Decision-Making With the SVS

16. To what extent were you given opportunities to adapt to emerging battlefield conditions during SVS training?

NOT AT ALL			SOMEWHAT			VERY MUCH	

17. How well did you adapt to emerging battlefield conditions during SVS training?

NOT AT ALL WELL			SOMEWHAT			VERY WELL	

18. To what extent will the SVS training prepare you to adapt to emerging conditions in combat?

NOT AT ALL			SOMEWHAT			VERY MUCH	

19. To what extent did the SVS permit you to train and rehearse the types of decisions an Infantry squad leader must make during urban operations?

NOT AT ALL			SOMEWHAT			VERY MUCH	

20. To what extent did your experience with the SVS teach you how tactical decisions are made when leading a squad?

NOT AT ALL			SOMEWHAT			VERY MUCH	

21. How well did you make decisions as a squad leader during the SVS training experience?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT          VERY WELL
  WELL
```

22. To what extent did your experience with the SVS *add* to your unit training in learning the decisions associated with effectively leading an Infantry squad during urban operations?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT          VERY MUCH
```

23. To what extent did you change your plan during SVS mission execution as a result of changing conditions and/or emerging threats?

```
|____|____|____|____|____|____|____|____|
NO CHANGE           SOME CHANGE       COMPLETE CHANGE
```

24. Do you believe your SVS missions would have been more successful if you had made more changes to your plan during execution?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          MAYBE             ABSOLUTELY
```

Part 4. Realism of the SVS

25. Was the overall realism of the SVS good enough to provide an effective training experience?

```
|____|____|____|____|____|____|____|____|
NO WHERE NEAR       APPROACHING       MOST DEFINETLY
GOOD ENOUGH         GOOD ENOUGH       GOOD ENOUGH
```

26. How captivated or drawn in were you by events and actions presented in the SVS?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT          COMPLETELY
```

27. How realistically did the SVS portray physical objects in the mission environment?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT          COMPLETELY
```

28. Were there moments during your experience with the SVS when you felt completely focused on the task of leading a squad?

```
|____|____|____|____|____|____|____|____|
NONE                OCCASIONALLY      FREQUENTLY
```

29. To what extent did the scenarios used in the SVS accurately simulate what you experienced during squad-level unit training?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT         VERY MUCH
```

30. How much were experiences in the SVS environment consistent with your experiences during urban operations field training exercises?

```
|____|____|____|____|____|____|____|____|
   NOT          MODERATELY         VERY
CONSISTENT      CONSISTENT      CONSISTENT
```

31. To what extent did the SVS accurately simulate the tasks and conditions specified in current squad-level battle drills?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT         VERY MUCH
```

32. How fast did the SVS friendly forces respond to the actions you initiated?

```
|____|____|____|____|____|____|____|____|
NOT FAST       MODERATELY FAST    VERY FAST
```

33. How realistically did the SVS portray actions made by members of the squad?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT        COMPLETELY
```

34. How realistically did the SVS portray actions made by the enemy?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT        COMPLETELY
```

35. Overall, how much could you focus on the squad leader experiences created by the SVS rather than on the computer keyboard and joystick functions?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT         VERY MUCH
```

Part 5. Motivation for Training With the SVS

36. How important is a desire to practice making squad leader decisions a reason for you to want to train with the SVS?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT         VERY MUCH
```

37. How important is <u>the desire to learn combat skills</u> a reason for you to want to train with the SVS?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL        SOMEWHAT        VERY MUCH
```

38. How important is <u>fun and personal entertainment</u> a reason for you to want to train with the SVS?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL        SOMEWHAT        VERY MUCH
```

Part 6. SVS Fidelity

In the table below, provide your assessment of the SVS in terms of these types of fidelity by circling one of the alternatives in the <u>right</u> column.

Type of Fidelity	How good was this type of fidelity in the SVS?
Physical: (*Do Soldiers look like real Soldiers? Does the terrain look realistic? Do trees and vehicles look real?*)	Excellent Good Adequate Poor Inadequate
Tactical Friendly Force: (*Does the Friendly force react according to doctrine? Does it react in a timely manner?*)	Excellent Good Adequate Poor Inadequate
Tactical Enemy Force: (*Does the Enemy force react as you would expect an enemy to react?*)	Excellent Good Adequate Poor Inadequate
Psychological: (*Were you involved in your role as a squad leader during mission execution?*)	Excellent Good Adequate Poor Inadequate

Part 7. Overall Opinion of the SVS Training Experience

39. Did the SVS training experience teach you something new about how a squad leader should conduct Infantry urban operations?   **Circle one: Yes   No**

40. Did the SVS training experience teach you something new about how a squad leader should <u>adapt</u> to emerging battlefield conditions?   **Circle one: Yes   No**

41. Did the SVS training experience teach you something new about how to make appropriate <u>decisions</u> as a squad leader during urban operations?   **Circle one: Yes   No**

Please make any other comments you wish to make about the SVS and its training value below.

APPENDIX I

SimFX Squad Leader Perception Questionnaire

Print your name_____

Your responses to items in this questionnaire should be based on your experience using SimFX. Respond to the following questions by marking an "X" in the appropriate box of the 7-point scale.

Part 1. Overall Training Value of SimFX

1. To what extent did SimFX provide you with an effective training experience?

```
|___|___|___|___|___|___|___|
NOT AT ALL      SOMEWHAT      VERY MUCH
```

2. In your opinion, how desirable is it to use a training tool like SimFX to gain experience as an Infantry squad leader?

```
|___|___|___|___|___|___|___|
NOT AT ALL      SOMEWHAT        VERY
DESIRABLE       DESIRABLE       DESIRABLE
```

3. How would you describe the amount of time you used SimFX?

```
|___|___|___|___|___|___|___|
TOO MUCH        RIGHT AMOUNT    NEED MORE
TIME            OF TIME         TIME
```

4. How challenging was the overall experience provided by SimFX?

```
|___|___|___|___|___|___|___|
  NOT           MODERATELY        VERY
CHALLENGING     CHALLENGING     CHALLENGING
```

5. In your opinion, did SimFX have a valuable impact on helping you to better understand how an Infantry squad is led during urban operations?

```
|___|___|___|___|___|___|___|
  NO             SOME            GREAT
VALUE           VALUE           VALUE
```

6. In your opinion, will using SimFX have a valuable impact on preparing you to lead an Infantry squad <u>in your unit?</u>

```
|___|___|___|___|___|___|___|
  NO             SOME            GREAT
VALUE           VALUE           VALUE
```

7. In your opinion, will using SimFX have a valuable impact on preparing you to lead an Infantry squad <u>in</u> <u>combat</u>?

```
|____|____|____|____|____|____|____|
  NO            SOME          GREAT
 VALUE          VALUE         VALUE
```

Part 2. Tactical Training Value of SimFX

8. To what extent did SimFX provide meaningful practice for exercising command and control over squad operations?

```
|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT      VERY MUCH
```

9. To what extent did SimFX provide you with opportunities to practice reacting to enemy contact during urban operations?

```
|____|____|____|____|____|____|____|
    NO            SOME          MANY
OPPORTUNITIES  OPPORTUNITIES  OPPORTUNITIES
```

10. To what extent did SimFX provide meaningful practice for understanding how squad-level fire control measures are executed?

```
|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT      VERY MUCH
```

11. To what extent did SimFX help you to better understand the influence of METT-TC factors on leading a squad?

```
|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT      VERY MUCH
```

12. To what extent did SimFX provide meaningful practice for understanding how squad-level movement to contact is controlled?

```
|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT      VERY MUCH
```

13. To what extent did SimFX provide meaningful practice for understanding how movement routes must be designated according to the terrain?

```
|____|____|____|____|____|____|____|
NOT AT ALL      SOMEWHAT      VERY MUCH
```

14. To what extent should a qualified instructor be present to provide you with feedback, coaching, and tactical guidance while you use SimFX?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT           VERY MUCH
REQUIRED            REQUIRED           REQUIRED
```

15. To what extent should a qualified instructor be present to guide you through a SimFX after-action review?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT           VERY MUCH
REQUIRED            REQUIRED           REQUIRED
```

Part 3. Adaptability and Decision-Making With SimFX

16. To what extent were you given opportunities to adapt to emerging battlefield conditions during the SimFX exercises?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT           VERY MUCH
```

17. How well did you adapt to emerging battlefield conditions during SimFX?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT           VERY WELL
WELL
```

18. To what extent can SimFX prepare you to adapt to emerging conditions in combat?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT           VERY MUCH
```

19. To what extent did SimFX permit you to rehearse the types of decisions an Infantry squad leader must make during urban operations?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT           VERY MUCH
```

20. To what extent did SimFX allow you to make the tactical decisions that are made when leading a squad?

```
|____|____|____|____|____|____|____|____|
NOT AT ALL          SOMEWHAT           VERY MUCH
```

21. How well did you make decisions as a squad leader during SimFX?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL          SOMEWHAT              VERY WELL
   WELL
```

22. To what extent did SimFX *add* to your unit training in learning the decisions associated with effectively leading an Infantry squad during urban operations?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL          SOMEWHAT              VERY MUCH
```

23. To what extent did you change your plan during SimFX as a result of changing conditions and/or emerging threats?

```
|_____|_____|_____|_____|_____|_____|_____|
NO CHANGE          SOME CHANGE          COMPLETE CHANGE
```

24. Do you believe your SimFX missions would have been more successful if you had made different decisions during execution?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL            MAYBE               ABSOLUTELY
```

Part 4. Realism of SimFX

25. Was the overall realism of SimFX good enough to provide an effective training experience?

```
|_____|_____|_____|_____|_____|_____|_____|
NO WHERE NEAR       APPROACHING        MOST DEFINETLY
GOOD ENOUGH         GOOD ENOUGH         GOOD ENOUGH
```

26. How captivated or drawn in were you by events and actions presented in SimFX?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL          SOMEWHAT             COMPLETELY
```

27. How realistically did SimFX portray the conditions of a squad mission in an urban environment?

```
|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL          SOMEWHAT             COMPLETELY
```

28. Were there moments during SimFX when you felt completely focused on the task of leading a squad?

```
|_____|_____|_____|_____|_____|_____|_____|
  NONE            OCCASIONALLY           FREQUENTLY
```

29. To what extent did the scenarios used in SimFX accurately portray what you experienced during squad-level unit training?

|___|___|___|___|___|___|___|___|___|
NOT AT ALL   SOMEWHAT   VERY MUCH

30. How much were SimFX experiences consistent with your experiences during urban operations field training exercises?

|___|___|___|___|___|___|___|___|___|
NOT   MODERATELY   VERY
CONSISTENT   CONSISTENT   CONSISTENT

31. To what extent did SimFX accurately simulate the tasks and conditions specified in current squad-level battle drills?

|___|___|___|___|___|___|___|___|___|
NOT AT ALL   SOMEWHAT   VERY MUCH

32. To what extent were the SimFX scenarios relevant to the current operating conditions (COE)?

|___|___|___|___|___|___|___|___|___|
NOT FAST   MODERATELY FAST   VERY FAST

33. How realistically did SimFX describe actions made by members in your platoon?

|___|___|___|___|___|___|___|___|___|
NOT AT ALL   SOMEWHAT   COMPLETELY

34. How realistically did SimFX describe actions made by the enemy?

|___|___|___|___|___|___|___|___|___|
NOT AT ALL   SOMEWHAT   COMPLETELY

35. Overall, how much could you focus on the squad leader experiences created by SimFX rather than on the computer keyboard functions?

|___|___|___|___|___|___|___|___|___|
NOT AT ALL   SOMEWHAT   VERY MUCH

Part 5. Motivation for Training With SimFX

36. How important is a desire to practice making squad leader decisions a reason for you to want to use SimFX?

|___|___|___|___|___|___|___|___|___|
NOT AT ALL   SOMEWHAT   VERY MUCH

37. How important is <u>the desire to learn combat skills</u> a reason for you to want to use SimFX?

```
|_____|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL              SOMEWHAT              VERY MUCH
```

38. How important is <u>fun and personal entertainment</u> a reason for you to want to use SimFX?

```
|_____|_____|_____|_____|_____|_____|_____|_____|
NOT AT ALL              SOMEWHAT              VERY MUCH
```

Part 7. Overall Opinion of the SimFX Training Experience

39. Did SimFX teach you something new about how a squad leader should conduct Infantry urban operations?   **Circle one: Yes   No**

40. Did SimFX teach you something new about how a squad leader should <u>adapt</u> to emerging battlefield conditions?   **Circle one: Yes   No**

41. Did SimFX teach you something new about how to make appropriate <u>decisions</u> as a squad leader during urban operations?   **Circle one: Yes   No**

Please make any other comments you wish to make about SimFX and its training value below.

APPENDIX J

The Simulation Environment

The ARI Warfighting Experimentation Lab consists of ten computers, a network hub, a simulated radio system, and an after action review/data retrieval system. There are four Soldier stations that consist of Dell ®Dimension 8300™ computers with a 3 gigahertz (GHz) Pentium 4 processor, equipped with two partitioned drives with 112 gigabytes (GB) of storage space, 1GB of Random Access Memory (RAM), a combined digital video drive (DVD) and compact disc rewritable (CD-RW) drive, a SoundBlaster® compatible soundcard, two network interface cards, an 18 inch flat screen flat panel monitor, and a 128MB PCI Express™ x16 ATI Radeon™ X300 SE graphics card. Each station is equipped also with a headset and individual controller for the simulated radio system. Stations 6 and 8 are equipped with a remote interface unit and Stations 2 and 8 have a hand-held terminal for the simulated radio system. Each computer has Microsoft Office 2000 ®, and the Advanced Interactive Systems ® Soldier Visualization System™ (SVS) Version 2.1 installed. The operating system is Windows XP Professional Edition®.

There are six control station computers. Four are identical to the Soldier workstations with the following exceptions:

- Station 1 is the Battle Master station and has the Battle Master SVS software installed which allows attachment of entities and operation in the stealth mode. Station 1 also has a remote interface unit, a hand-held terminal, and a headset.

- Station 2 is the OneSAF OTB station. It does not have SVS installed, but rather Version 2 of OneSAF OTB. Instead of Windows XP Professional® as an operating system, Station 2 uses Linux Red Hat Version 9.0 ™. Station 2 also has a radio simulation system consisting of the headset and hand-held terminal.

- Station 3 is the audio logger computer and stores all the simulated radio system traffic. It is a Dell 8300 identical to the Battle Master station, except it does not have SVS installed. However, it does receive data from the Digital Audio Control System to record the audio transmissions and data.

- Station 4 is the logger station. It is identical to Station 1, except that it stores the data created by the Virtual Soldier Simulation Assessment (ViSSA) computer. It has no simulated radio system.

- Station 9. The computer at the center of the console underneath the network hub is the Digital Audio Control System. It is the primary

integrator of communications traffic, and must be programmed with a communications model (done by the OneSAF OTB operator) for each scenario. The monitor and keyboard for the Digital Audio Control System are collocated.

- Station 10. The computer at the far end of the control bank is used to set up or program to capture selected events. It has the ViSSA assessment tool installed.

- Network Hub: The network hub on top of the Digital Audio Control System computer connects all the stations and computers together.

- System Layout. The system layout for the Warfighting Experimentation Lab is shown in the photos below.
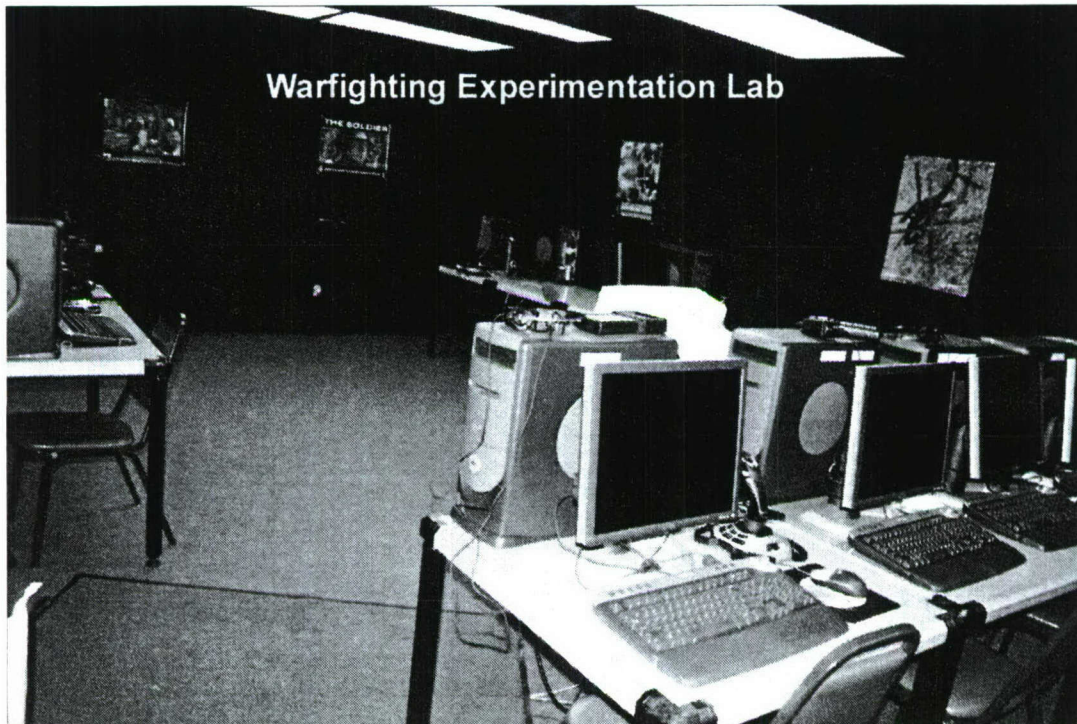
Warfighting Experimentation Lab
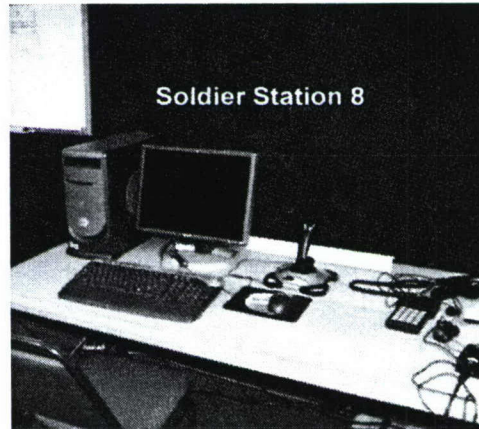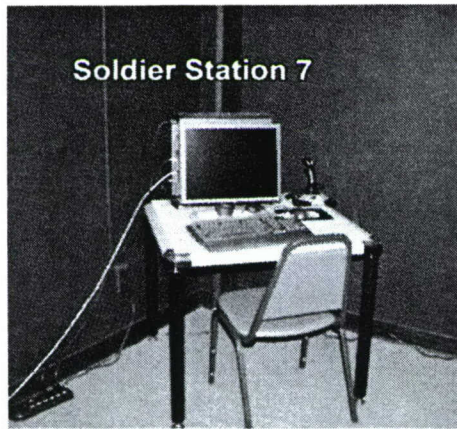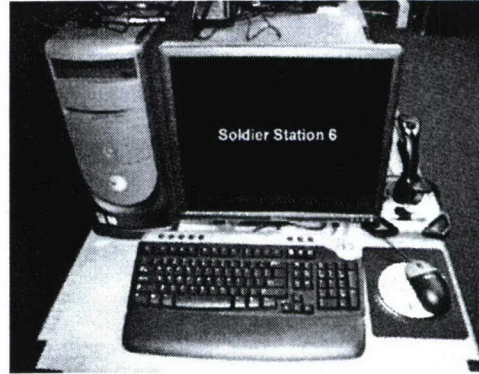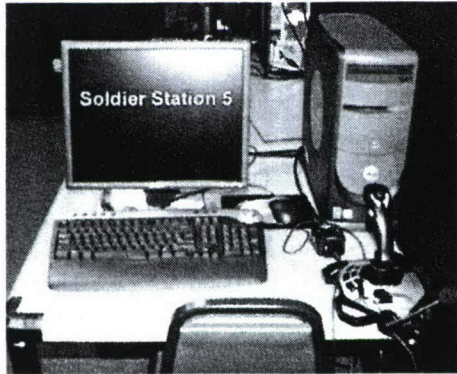
Individual Work Stations

Control Stations

APPENDIX K

Platoon OPORD for Patrol Scenario

Here's the ***situation*** for our presence patrol in the village of McKenna – we are currently faced with the La Ban militia, which was pushed out of this village by the unit of action that we just relieved. The La Ban militia unit currently has withdrawn to the north side of Higley Hill. The unit, probably originally company sized, is now down to about 15-20% strength. They have high quality small arms weapons, and are moderately well trained. They appear to be low on ammunition and supplies.

The local population still has about 25 or so folks in the area that are sympathetic to the La Ban insurgents and do not like Americans. Some of them may belong to the La Ban militia that is north of us and are collecting intel on our forces here in McKenna. The people are openly hostile to our presence.

Our company is currently defending the terrain west of McKenna, and the battalion is defending along a line that generally follows the 04 north-south gridline. The unit on our left is 2d Platoon from our own company, and the unit on our right is Bravo Company, 2d Battalion 59th Infantry. The CO says it is 2d Platoon of Company B, 1st of the 59th Infantry.

1st Platoon's ***mission*** is to conduct a presence patrol in the village of McKenna. Foot patrols by two squads will commence NLT 080700ZJUL05. Each squad will make one complete round through the center and outskirts of town. The patrols serve as a presence and show of force by American forces.

The concept of the operation is pretty simple. The platoon patrol will move to the outskirts of McKenna and establish a support by fire position south of the village with the platoon BFVs. One squad will provide a foot patrol on the west end of the village and another on the east end. One squad will provide local security for the BFV sections, with one fire team per section. The two foot patrols will provide immediate reaction force to the other in the event of a rapidly deteriorating situation with either hostile villagers or insurgents.

1st Squad will conduct a foot patrol on the western side of the village. They will move initially to CP 1, then to CP 2, CP 3 and back to CP 1 in a clockwise movement. Be prepared to, on order, act as an immediate reaction force if 2d Squad is attacked and requires assistance.

2d Squad will conduct a foot patrol on the eastern side of the village. They will move initially to CP1 five minutes behind 1st Squad, then CP 3, CP4, CP 5, and finally to CP 6. The second patrol performed by 2d Squad will follow the same route. Be prepared to, on order, act as an immediate reaction force if 1st Squad is attacked and requires assistance.

The 3d Squad will provide local security for the two BFV sections. 3d Squad ALPHA Team will provide security for Section 1, 3d Squad BRAVO Team will provide security for Section 2. Those elements will move with their respective sections in the event the BFVs are displaced.

BFV Section 1 will provide support by fire to 1st Squad from its initial support by fire position. Section 1 is composed of C-11 and C-12.

BFV Section 2 will provide support by fire to 2d Squad from its initial support by fire position. Section 2 is composed of C-13 and C-14.

Be sure that your automatic weapons and grenade launchers are manned in that order. Here's a map of the village with the building numbers and the check points. Here is a picture of the village with the building numbers superimposed on them. The view is from west to east.

The rules of engagement are also simple – you must request permission to fire on any villager or group of villagers, unless fired upon first. Do not call for indirect fire in the village proper or on the outskirts unless you have permission first. Period. Do not enter the church without permission for any reason. Bradleys and tracked vehicles are not permitted in the village proper.

One last note of caution – do not move alone in the village without a buddy. I'll remind you that the villagers ain't our friends.

As far as *service support* goes – our ration cycle is CCA for now. In the event of casualties C-12 and C-13 (BFVs) will be used to evacuate the wounded to the nearest area where we can call in helicopter MEDEVAC safely. We will fuel before and after the mission, so there will not be any resupply. We are at 100% strength, so there won't be any replacements for now.

Command and signal – the platoon CP will be in C-11. The vehicle will be used by 1st Squad as a weapons platform, therefore the VC will take all commands from the 1st Squad Squad Leader. PSGs BFV will be used by 2d Squad as a weapons platform, therefore the VC will take all commands from the 2d Squad Squad Leader. The PSGs vehicle, C-13. The company CP is located at GL039826. If anything happens to me, the chain of command SOP is in effect. Frequencies as per the CEOI, and the callsigns are fixed and are:
Me – Cobra 16
Platoon sergeant – Cobra 16Alpha
1st Squad – Cobra 16 Tango
2d Squad – Cobra 16 Romeo
3d Squad – Cobra 16 Quebec
Robotics NCO – Cobra 16 X-Ray
Section 1 Leader – Cobra 11Alpha
C-11 BFV – Cobra 11

C-12 BFV – Cobra 12
Section 2 Leader – Cobra 13Alpha
C-13 BFV – Cobra 13
C-14 BFV – Cobra 14
Company Commander – Cobra 6
2d Platoon – Cobra 26
3d Platoon – Cobra 36

The challenge and password will be issued each evening at chow. The current challenge and password are Knife/Salamander. Running password is Foogas.

Are there any questions?

K-4
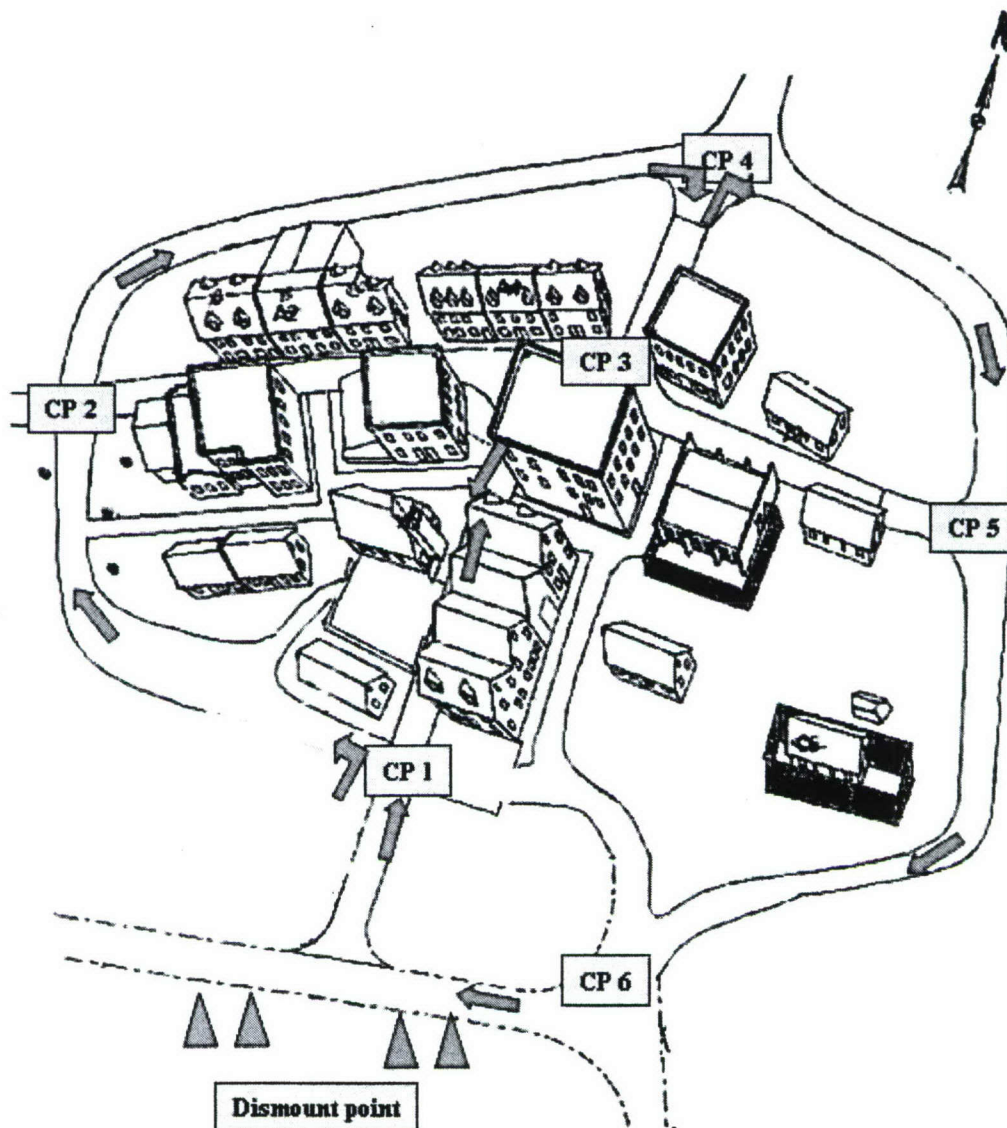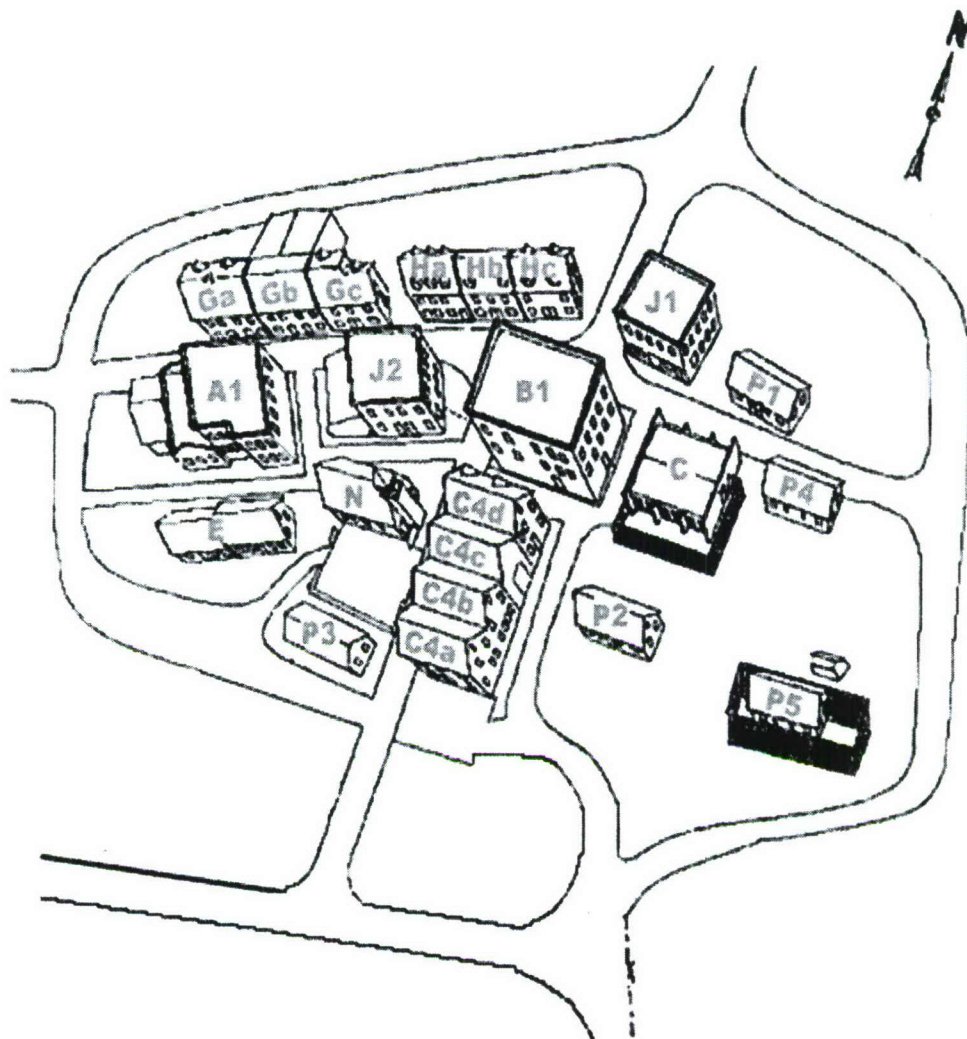
APPENDIX L

Platoon OPORD for Defense Scenario

Here's the ***situation*** for our defense of McKenna Village – we are currently faced with the La Ban militia, which was pushed out of this village by the unit of action that we just relieved. The La Ban militia unit currently occupies the high ground to the north of the village at the base of Higley Hill. The unit, probably originally company sized, is now down to about 30-35% strength. They have high quality small arms weapons, and are moderately well trained. They appear to be low on ammunition and supplies. Intel reports that trucks have been spotted moving forward to their positions, and these are probably resupply and medevac vehicles. The unit is not able to counterattack or mount any offensive operations, but can probably put out several patrols both day and night.

The Gordonian military has become more actively involved in this fight, and Intel also reports that they may be moving a mechanized brigade into this area. They are equipped with tanks and BMPs. They could just be trying to stiffen their defense at this point, but they could also be preparing to attack.

The local population still has about 25 or so folks in the area that are sympathetic to the La Ban insurgents and do not like Americans. Some of them may belong to the La Ban militia that is north of us and are collecting intel on our forces here in McKenna. The people are openly hostile to our presence.

Our company is currently conducting surveillance of the terrain north of McKenna, and the battalion is defending along a line from west to east from Griswold Hill to McKenna. The unit on our left is 2d Platoon from our own company, and the unit on our right is Bravo Company, 2d Battalion 59th Infantry. The CO says it is the 2d Platoon. We have to have interlocking fires with them; our battalion is spread fairly thin and only has 1st Platoon Bravo Company as the battalion reserve. Our reserve at company is the 3d Squad 3d Platoon. They are located in Building P3, the dark gray building to our south.

1st Platoon's ***mission*** is to occupy Buildings J1, P1, and P4, oriented to the north-northeast. Establish an OP at least 300 meters north of the village and forward of our position no later than 1700 this evening. We will be conducting surveillance north of McKenna for several days while the UA we relieved is reorganized and consolidated, and another UA from Germany arrives and gets set up. Then, I'm told, we'll be going on the offense.

The concept of the operation is pretty simple. We need to maintain fields of fire to our north west, north, and northeast.

Our first squad will occupy Building P1, oriented to the north northeast, 2d squad will be occupy Building J1, oriented to the north-northwest over to north-northeast, and 3d Squad will be occupy Building P4, oriented northeast and east.

2d Squad will put out the observation post. It must be established no later than 1630 hours.

Be sure that your automatic weapons and grenade launchers are manned in that order. Here's a map of the village with the building numbers and the platoon positions. Here is a picture of the village with the building numbers superimposed on them. The view is from west to east.

The rules of engagement are also simple – you must request permission to fire on any villager or group of villagers, unless fired upon first. Anything beyond the OP is fair game. Once we pull the OP in, anything north of the village is fair game. Do not use grenade launchers or automatic fire in the village unless you have permission first. Period. Do not enter the church without permission for any reason.

One last note of caution – do not walk the streets of the village without a buddy. I'll remind you that the villagers ain't our friends.

As far as ***service support*** goes – our ration cycle is CCA for now. Water will be delivered at night with the evening meal, as will the rations for the morning and noon meals. Pickup point and chow at Building J2. Mail will also be brought at that time. Ammo will be in Building C4d. The armorer is there also in the event you have a problem with a weapon or need parts or lubricants and cleaning supplies for your weapons. Due to the inexperience of our platoon medics and the shortage of medics, the company will run a consolidated aid station in Building C4c. In the event you take a POW, they will be evac'd to Building C4a. 3d Platoon is running a POW collection point there. Any captured enemy equipment will be collected at Building C4d and turned in to the armorer. We are at 100% strength, so there won't be any replacements for now.

Command and signal – the platoon CP will be in Building C4d. The company CP will be in Building C4b. If anything happens to me, the chain of command SOP is in effect. Frequencies as per the CEOI, and the callsigns are fixed and are:
Me – Cobra 16
Platoon sergeant – Cobra 16Alpha
1st Squad – Cobra 16 Tango
2d Squad – Cobra 16 Romeo
3d Squad – Cobra 16 Quebec

Company Commander – Cobra 6
2d Platoon – Cobra 26
3d Platoon – Cobra 36

The challenge and password will be issued each evening at chow. The current challenge and password are Tornado/Floss. Running password is Bagpipes.

Are there any questions?
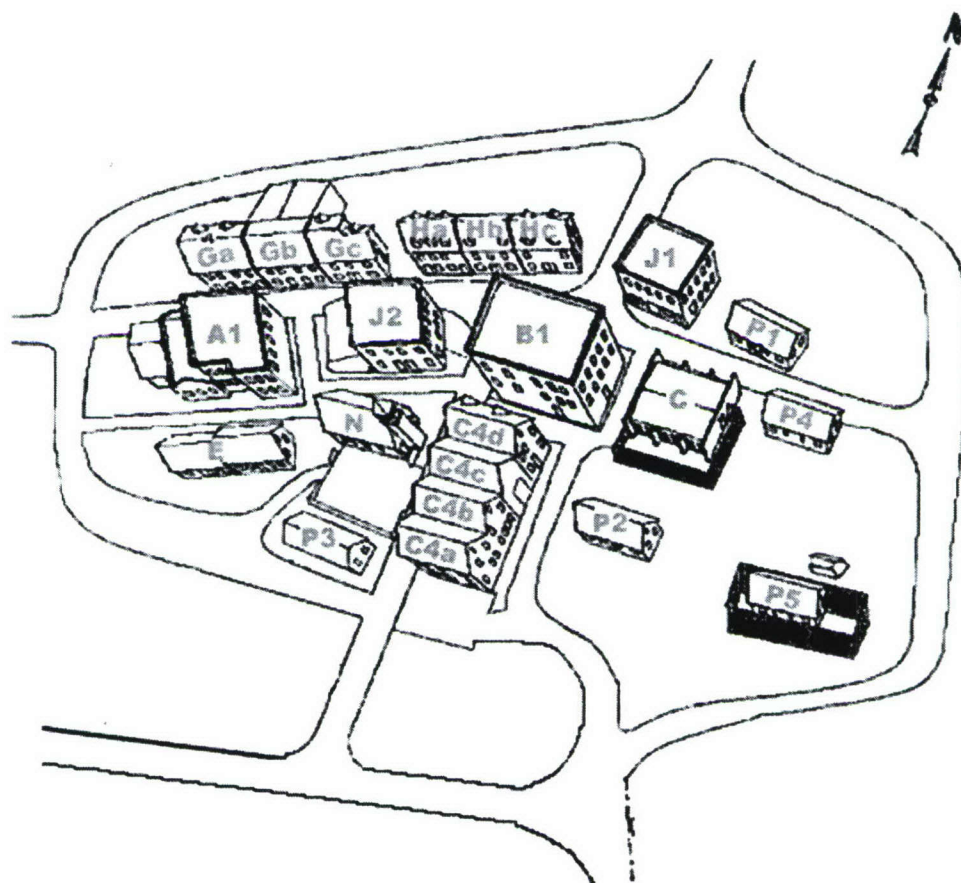
APPENDIX M

SimFX Instruction Slides

SimFX Introduction

This exercise is designed to measure your rapid tactical decision-making skills and your ability to adapt to changing simulated operational conditions. You will complete two scenarios: patrol and defense. This exercise is not a test. You will not be given a score. It is for research purposes only. You will use a program called Simulated Field Exercise, or "SimFX."

For the next several minutes we will provide you with information about how to use the SimFX program. We will show you the log-in procedures, familiarize you with the screens you will encounter, and show you examples of the essay and multiple choice questions you will answer. We will also show you how to access information that will help you make your decisions and record your answers and other responses.

Follow these simple tips and instructions, and you will be able to complete the exercises in a timely manner.

To begin using SimFX, double-click on the SimFX Player shortcut icon on your desktop. After selecting this icon, you should see this screen.

Instructions

Reference

Play Scenario ← Select "Play Scenario"

SimFX
[SIMULATED FIELD EXERCISE]

MICRO ANALYSIS & DESIGN
[VERSION 1.0]

Open the patrol scenario.
(You will complete the patrol scenario first, then the defense scenario.)

Open the patrol.sfx file

You should now see the log-in screen. When you are ready to begin, type in your last name, followed by the number 1. This is your log-in ID for the Patrol scenario. For each *additional* scenario you execute, you will type in your last name followed by the number 2, then 3, and so on. Once you have correctly entered your log-in ID, click OK.

Question

Your response

Icons

Map

This is the question screen. Always read each screen carefully from left to right, from the Situation Awareness Probe to the icons on the far right.

Your response

Possible additional sources of new information (TxtMsg & Icons)
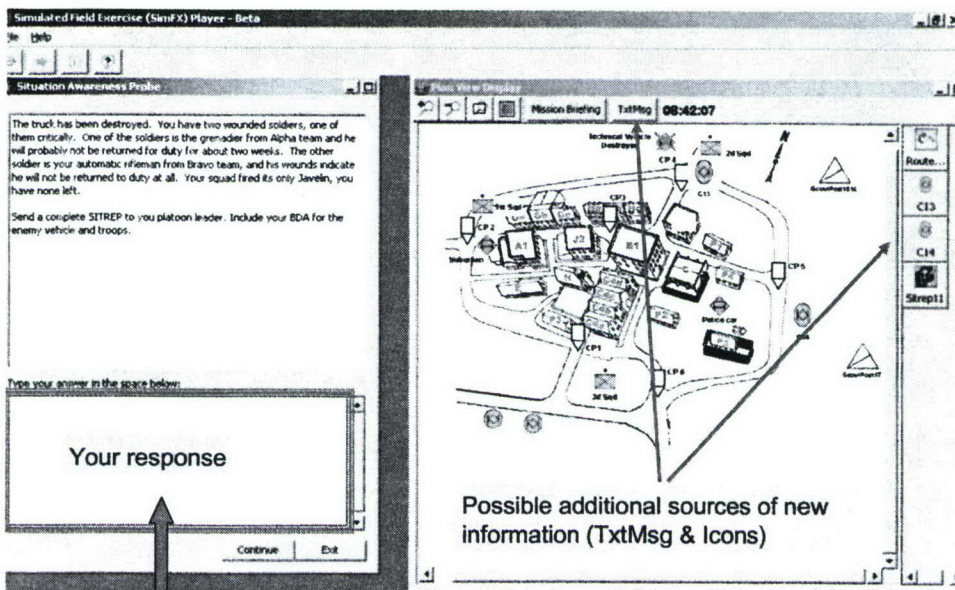
The Situation Awareness Probe box (top left) gives you information, directions, and asks questions. The red arrow points to the answer box, where you enter your response to the questions. *Before entering an answer, see what information is available to you by reading the information on the screen to the right. Before selecting "Continue," make sure you have read all the available information and have finished typing your response. You cannot return to a previous screen once you select continue.*

The truck has been destroyed. You have two wounded soldiers, one of them critically. One of the soldiers is the grenadier from Alpha team and he will probably not be returned for duty for about two weeks. The other soldier is your automatic rifleman from Bravo team, and his wounds indicate he will not be returned to duty at all. Your squad fired its only Javelin, you have none left.

Send a complete SITREP to you platoon leader. Include your BDA for the enemy vehicle and troops.

Once you select Continue, you cannot go back!!

Make sure you have read all the available information and have finished typing your response. Once you select Continue you CANNOT go back to the previous screen.

The truck has been destroyed. You have two wounded soldiers, one of them critically. One of the soldiers is the grenadier from Alpha team and he will probably not be returned for duty for about two weeks. The other soldier is your automatic rifleman from Bravo team, and his wounds indicate he will not be returned to duty at all. Your squad fired its only Javelin, you have none left.

Send a complete SITREP to you platoon leader. Include your BDA for the enemy vehicle and troops.

Text messages are available each time the TxtMsg button flashes RED.

Once you have read the question in the Situation Awareness Probe box, you may notice a flashing red TxtMsg button in the upper bar of the Plan View Display (top right). Click on it to see any messages you may have received. This is *very important* because it will give you information about the battlefield, and will help you make decisions and answer questions.

Source column

Hide button

Text Messages are reports from members of the unit who are identified in the Source column of the Text Messages box. Also note the Timestamp for each message. This is important because all messages will remain in the Text Messages box. The most current messages will appear at the top of the order. When you are done reading the messages, click the Hide button.

Icons

You can also gather information by clicking on the icons to the far right. For example, if you click on the C13 icon, you will either request information from C13, or you will be able to send C13 a command, depending on where you are in the scenario.

M-5

Other Icons and Their Uses

Orders – gives you the ability to record the orders you would send to a subordinate unit. Each order is recorded.

SITREP – gives you the ability to send a SITREP to your next higher headquarters or to one or all of your subordinate units. Each SITREP is recorded.

UAV – Unmanned Aerial Vehicle. This gives you the opportunity to send an order to the Robotics NCO for an aerial sensor and recon capability, and gives him the opportunity to send you a report if the UAV is available at the time of the request.

SUGV – Small Unmanned Ground Vehicle. This gives you the opportunity to send an order to the Robotics NCO for a ground sensor and recon capability, and gives him the opportunity to send you a report if the SUGV is available at the time of the request.

NOTE: Each time you select one of these icons, it is recorded for later evaluation. Please be sure to use them if you would in a real situation.


By clicking on the C13 icon at this point in the scenario, you sent a request for information about the enemy battle damage assessment from the previous engagement.
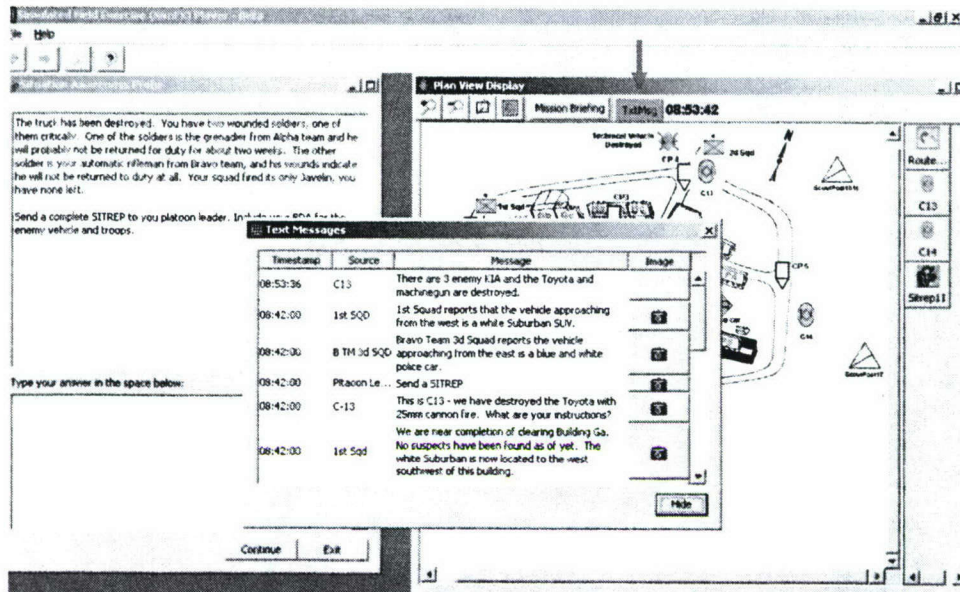
When you see the red Txt Msg button blinking again, select it. It will be a message from C13 giving you the information you asked for when you selected the C13 icon previously. The new message will appear in the Text Messages box, as shown above.
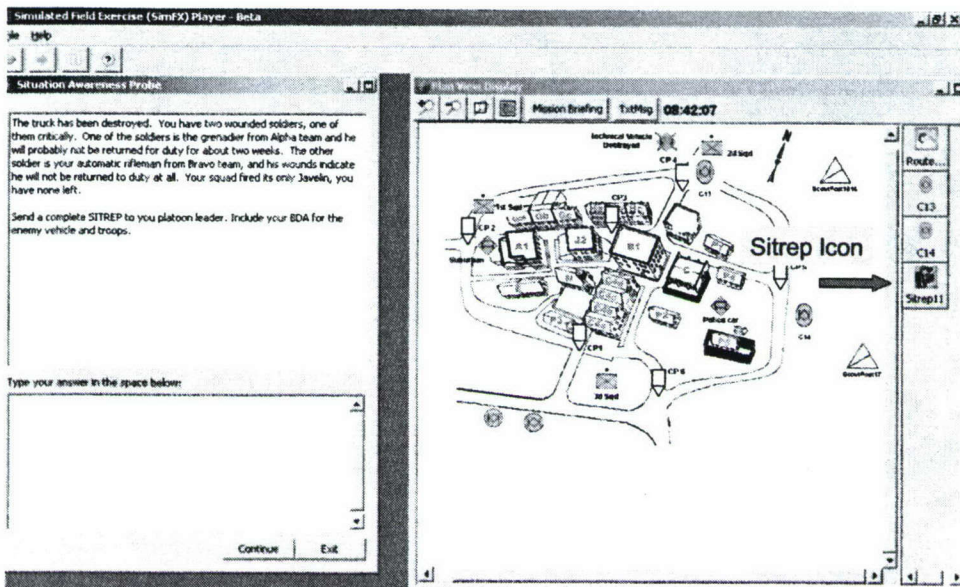

There is also a SITREP icon to the far right. After you read your question and text message, you can submit a SITREP by selecting the SITREP icon.
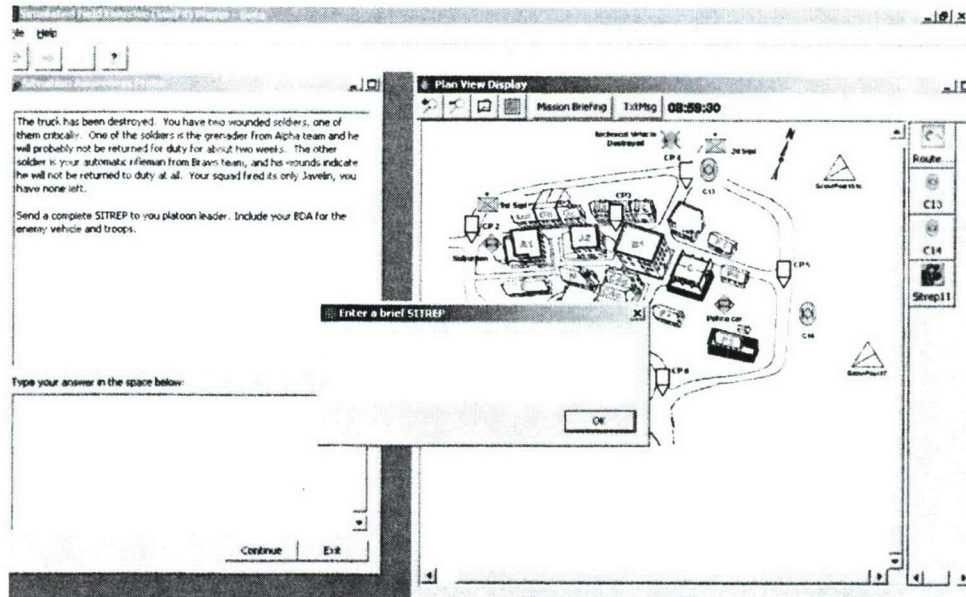
After you select the Sitrep icon, you can type your SITREP in the box provided. You always want to get credit for sending a SITREP.

Time remaining for this decision.

Multiple-choice Question

Possible responses.
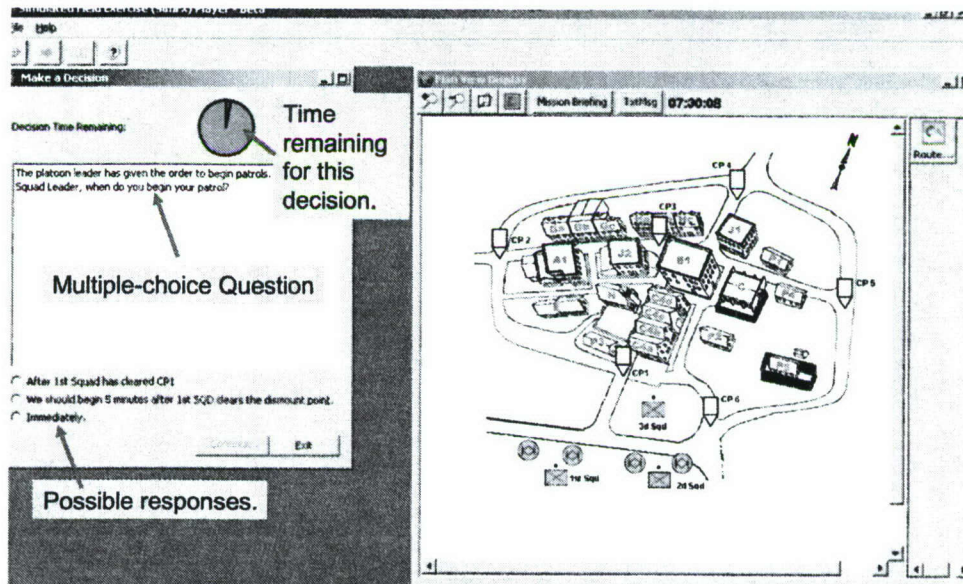
Some multiple choice questions may be timed. If so, the green clock in the upper portion of the Make a Decision window lets you know how much time you have to select a response to the question. If the clock turns red, then your time to answer the question has expired *and the exercise will terminate.*
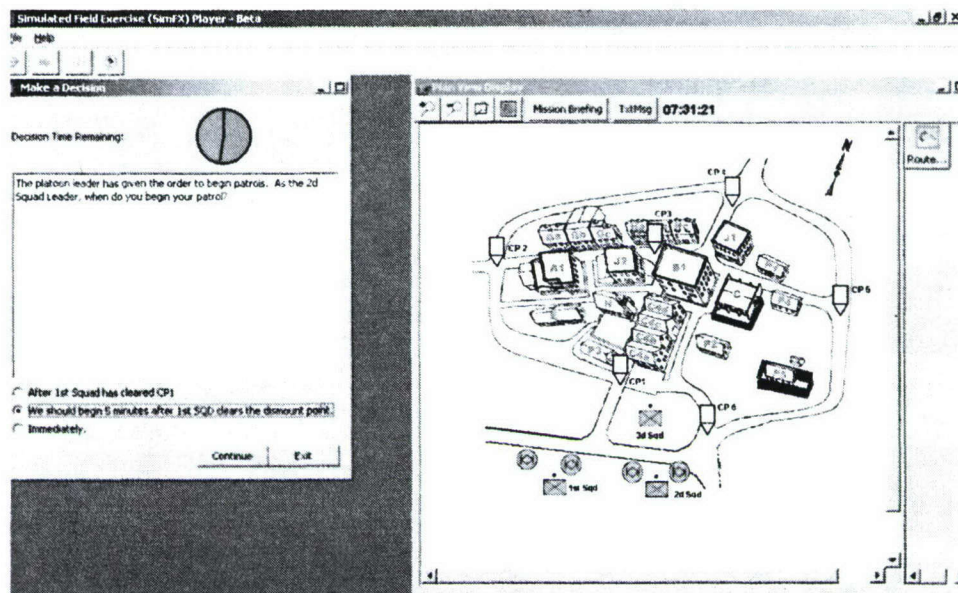
In summary, remember to scan from left to right, checking text messages and any icons that will give you information. If the TxtMsg button is flashing RED, then select it before you complete your response and before you select "Continue" in the Make a Decision box. Remember to complete your response before the green clock turns red. If you don't, the exercise will terminate.
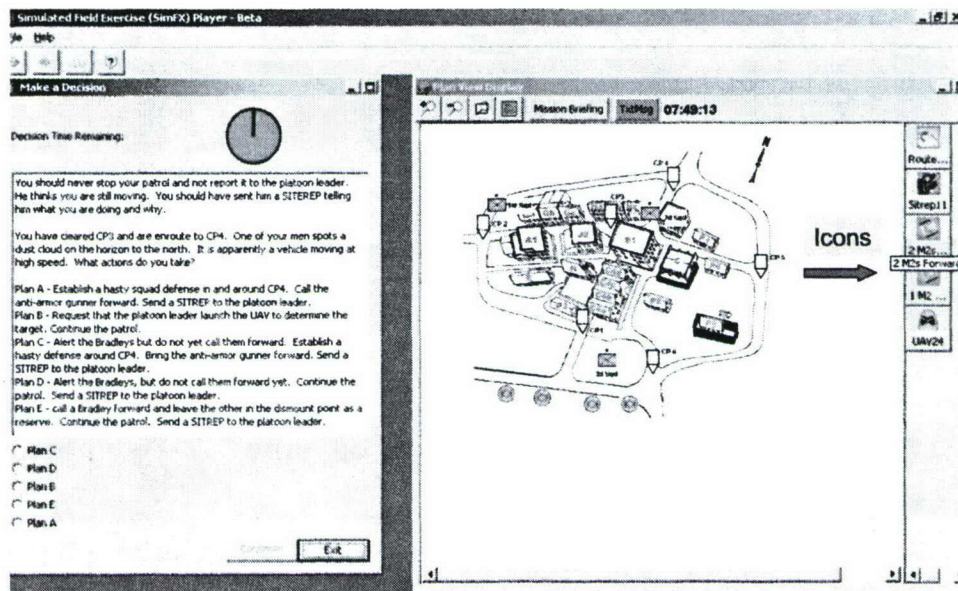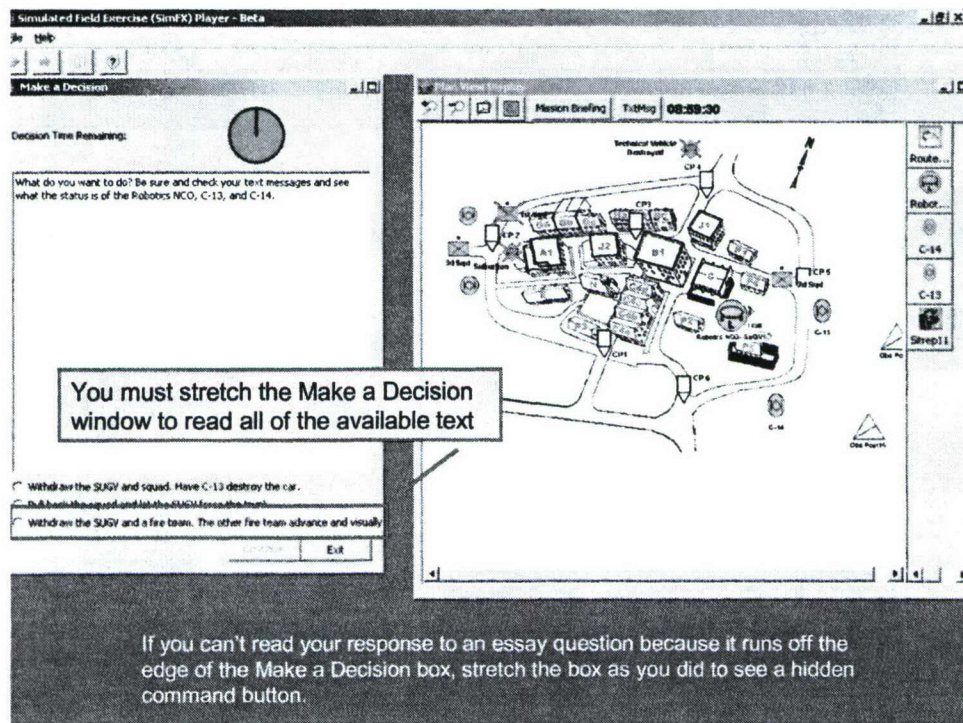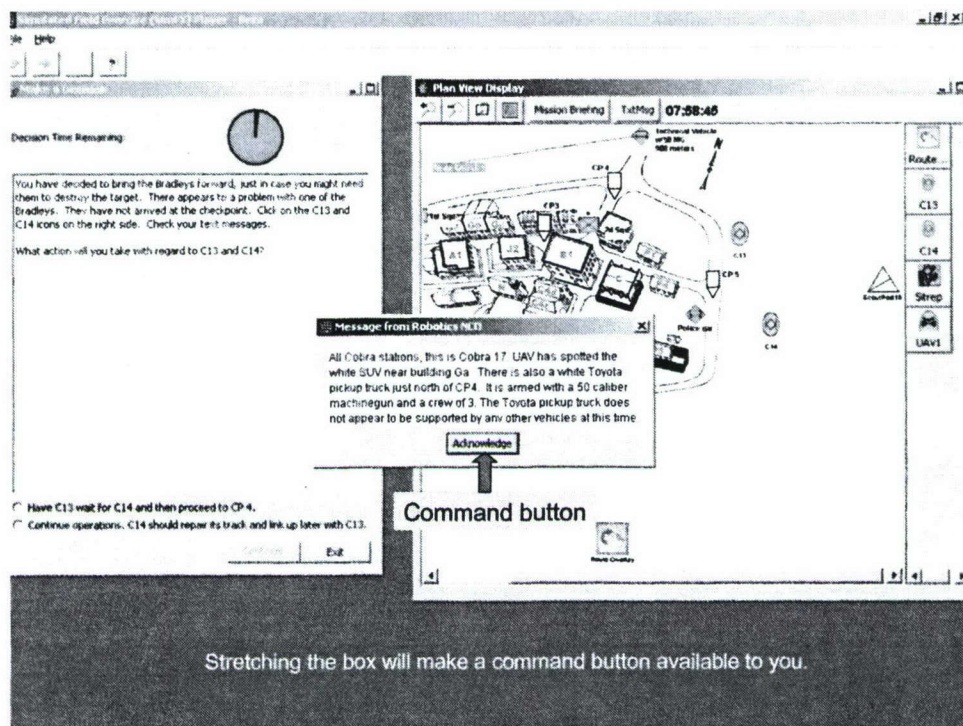

To read the icons on the right in more detail, move your cursor over the icon but don't select it. Just keep the mouse arrow over it for a few seconds. It will show you the name of the icon and its function. By selecting the icon, you are initiating an action. For example, selecting the 2 M2s icon will allow you to move 2 M2s forward.
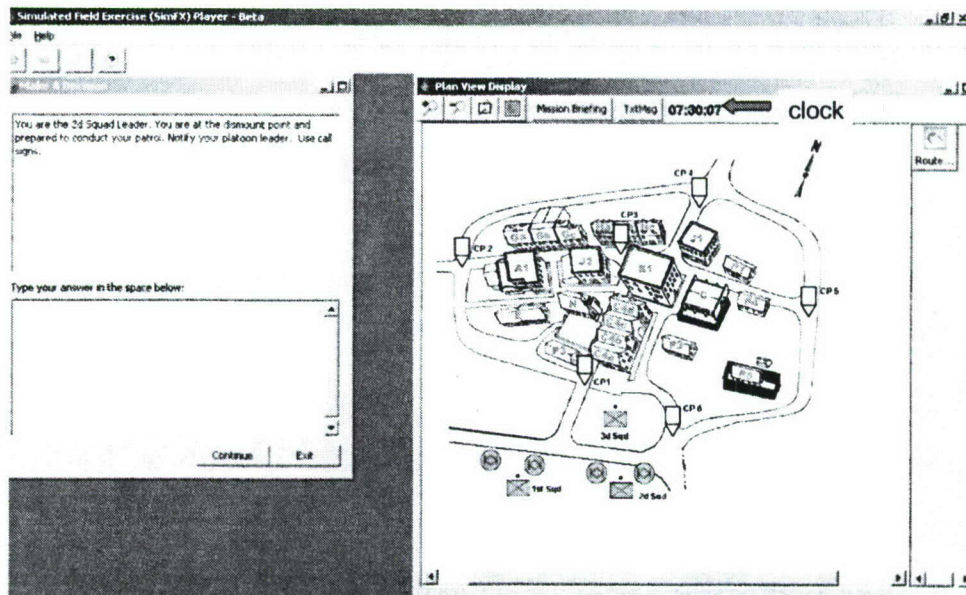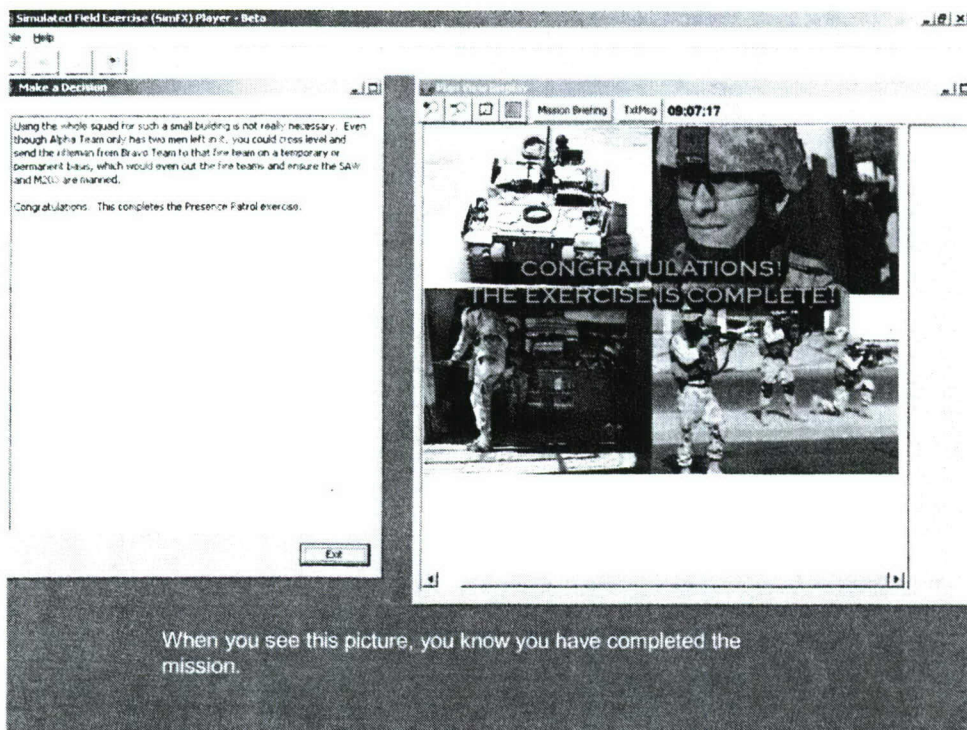
There is a digital clock next to the TxtMsg box that shows the elapsed exercise time (07:30:07). The exercise always starts at 0730 hours. If you click on the numbers, then you will see the time remaining for the exercise.
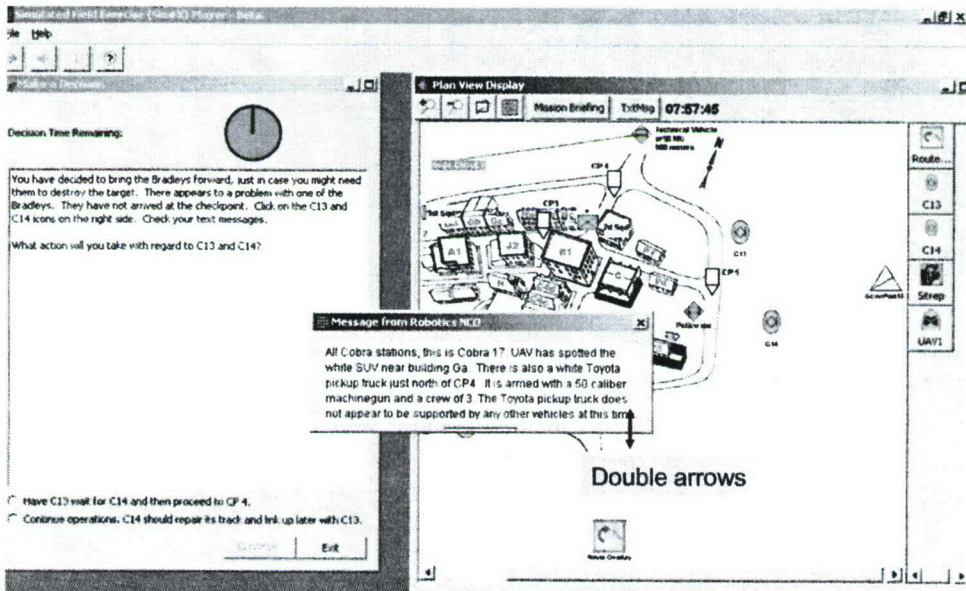
If you see a text box where the "acknowledge," "OK," or any other command button cannot be seen near the bottom of the box, then simply stretch the box using your cursor. Slowly move your cursor over the bottom edge of the box until you see the double arrows. Click and hold the left mouse button to stretch the bottom of the box down to expose the hidden command button(s).

Command button

Stretching the box will make a command button available to you.

You must stretch the Make a Decision window to read all of the available text

If you can't read your response to an essay question because it runs off the edge of the Make a Decision box, stretch the box as you did to see a hidden command button.

When you see this picture, you know you have completed the mission.

SimFX - Review

Remember the following:
- Scan from left to right.
- Be sure to read all the material on screen.
- Don't forget the text boxes.
- Don't forget the icons and other sources of information.
- Multiple choice questions may be timed.
- Be mindful of the elapsed time and time remaining.
- If you can't see a command button or all the text – stretch the window.